NAVAL AVIATION NEWS

Jets on Carriers
Weather Squadron
Post War Fleet

April 1947

RESTRICTED

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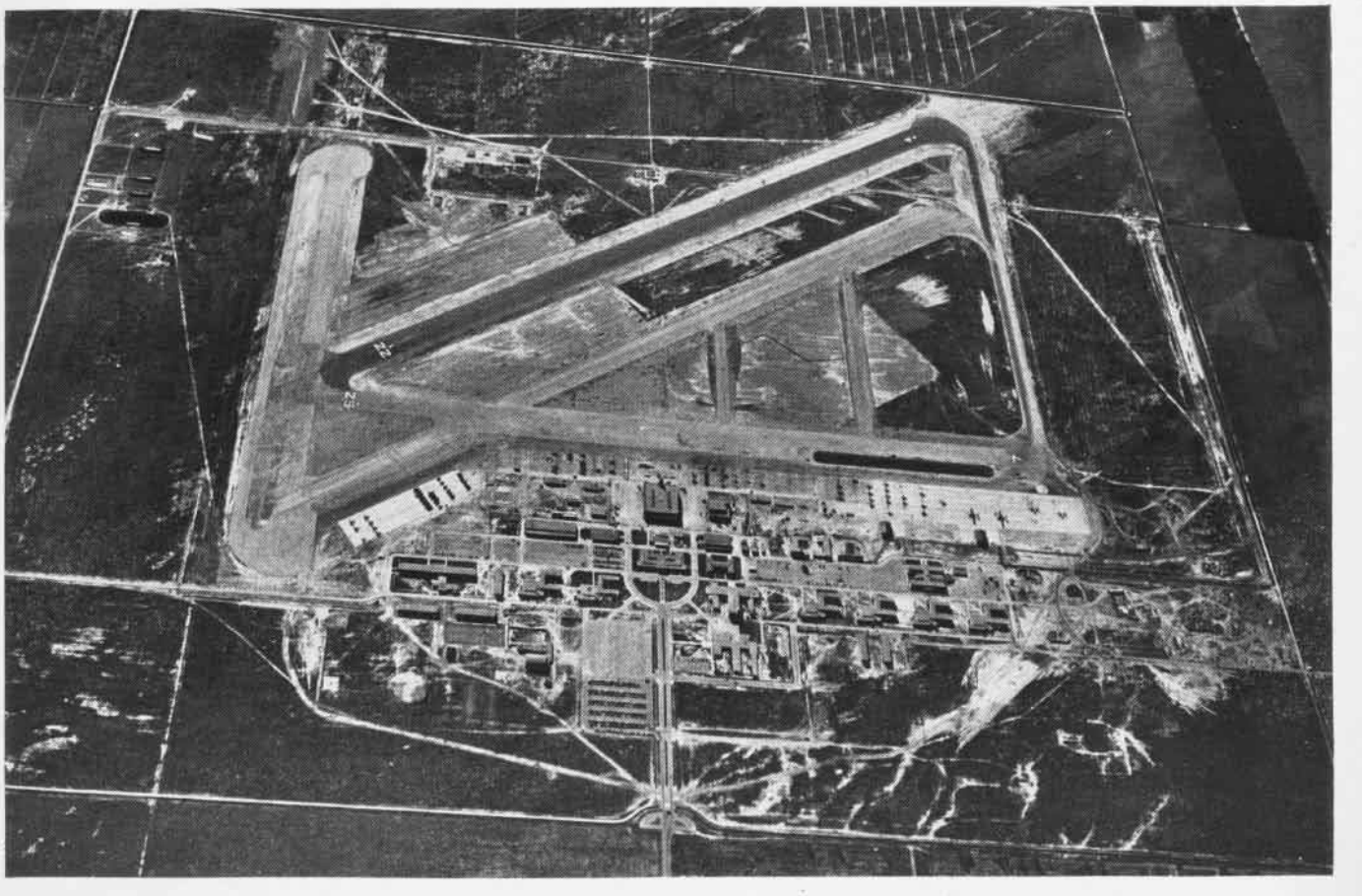
WOULD YOU LAND HERE?

If you were a Reserve you might be landing at one of these stations. Test your recognition, see if you know where these are in the East and West. *Ans. on Pg. 40.*



JETS ON CARRIERS

JETS ARE here to stay! The year 1946 saw the initiation of one of the most radical and progressive steps ever taken in the history of the U. S. Navy's aeronautical organization—conversion to jet-propelled aircraft.

The change from biplane to single wing has had a profound effect on the history of aviation. So has the change from fixed pitch propeller to controllable pitch propeller; but, the changes that jet power is expected to bring about in Naval Aviation may well over-shadow all previous developments. Future carrier aircraft will probably be all jet powered configurations.

JET PROPULSION is more than a complete power system change, it constitutes also, a major structural change. Piloted planes must now be built capable of withstanding the extraordinarily high stresses that exist at, and beyond the speed of sound. For only at these very high speeds can we fully utilize the potential of jet power.

PHANTOM JUST A BLUR OF SPEED AS IT STREAKS PAST THE ISLAND OF THE USS ROOSEVELT ON ITS FIRST CARRIER TAKE-OFF

Operation Of Jet Airplanes Off Aircraft Carriers Poses Variety Of New Problems

ALONG with the problems of power and structural development brought on by the advent of the jet-powered airplane, the Navy has the additional problems of developing new methods of handling jet planes aboard the aircraft carrier. The Bureau of Aeronautics is particularly concerned with the rapid development of these new ideas and techniques.

Of course, the major difficulty is that of getting the new jet plane off and on a small mobile landing area under combat conditions. At low speeds the propellered plane has a definite advantage over most jet airplanes, in that the power available for acceleration or climbing is much greater. Thus, this lack of needed power at low speeds, detrimentally affects take-off and wave-off characteristics of the jet.

The *Phantom* experienced no difficulty in taking off the carrier FDR during its initial tests. Its take-off run is no longer than that of some current reciprocal powered fighters. This is concrete evidence that in the not-too-distant future all jet planes will have advanced beyond the stage where the present slow acceleration is a problem. However, the *Phantom* is a fairly light jet plane, and most contemporary operating jet planes will have a somewhat slower rate of take-off acceleration. Therefore, during this interim period, most types of jet fighters will have to use exterior power for heavy load take-offs.

ADMIRALS RADFORD, BOGAN DISCUSS FIRST JET HOP WITH PILOT

THE catapult, widely used aboard carriers during the past war and in use for many years aboard cruisers and battleships, will continue to be a flattop fixture. It is still considered the best answer to the slow acceleration problem of either jet-powered or conventional aircraft. The catapult is continuously being improved and modified so as to make it capable of launching heavier aircraft and to give the faster end-speeds required in jet airplanes.

The higher landing speed, longer landing run and the floating tendencies of the jet, plus its dependence on velocity for power, give rise to new tactical problems.

The airplane to get aboard properly may have to be given the "cut" signal sooner. Wave-offs may be given sooner to insure adequate altitude by the time the plane reaches the ship. The clean design of jet airplanes, and residual thrust of the engine after cutting the throttle may make a quick-acting drag device desirable to keep the airplane from floating excessively. This device will probably take the form of a drag flap either on the wing or on the fuselage and will be actuated on the "cut" signal.

Actual jet aircraft operation off carriers in recent tests have shown many of the more anticipated difficulties to have been over-estimated. At the same time, many new unforeseen problems of a relatively minor nature have arisen.

The jet engine will change the starting technique slightly. Because of the numerous advantages of the internal electric starter, it has become preferred over all other starting systems. The jet turbine, however, requires several times the power necessary for the conventional engine. This is true because jet needs considerably more power for starting, uses electric controls, and has more electronic

equipment than the conventional airplane. As a result of the high power required, battery weight precludes the use of internal power units. Therefore, some type of external power supply is demanded. All that is necessary is a battery cart with enough power units to turn the turbine up to required speed for starting; or a generator that can develop and deliver the high power desired.

Research is also continuing, however, in the development of an internal power unit capable of delivering the power necessary for the needs of the jet engine, without too great a sacrifice in weight.

THE CHANGE from a propeller to a jet has occasioned a new definition of deck safety. In the past "BEWARE OF THE PROPELLERS" was painted on every corner of the flight and hangar decks to remind the unwary. Now it well may become "BEWARE OF THE JET BLAST".

Although the jet blast is a danger somewhat comparable to the propeller, the relative danger is far less. In the past a propeller injury was either fatal or dismembering. The jet blast should never be fatal for many reasons.

First, the blast is only dangerous in a small area immediately behind the jet. *Second,* a person walking into the jet is warned by the warm surrounding air long before he gets in the danger zone; he need move only a few feet to clear himself. *Third,* during carrier operations, personnel normally wear enough clothing to protect themselves from wind and flashburn; these clothes need only be fire-resistant to be sufficient protection from the blast. *Fourth,* a man walking inadvertently into the blast would normally be blown to safety by the force of the jet itself, before being badly burned. *Last,* to achieve economy of operation, the jet engine will probably only be started and run in small specified areas, just prior to take-off, thereby cutting down the opportunity for accident tremendously. Inasmuch as jets require no warm-up, starting immediately prior to take-off should not slow operations.

The jet exhaust will modify our handling technique of the arrested airplane after landing. In some designs it will be impossible for the hookman on deck to clear the arresting wire from the hook due to the blast. The plane may, however, drift back enough on deck to allow the wire to fall

BRINGING FD-1 TOPSIDE VIA SIDE ELEVATOR OF U.S.S. ROOSEVELT

free of its own accord. If future operation proves the plane cannot be relied upon to release itself in this manner, an automatic releasing mechanism will be used. This mechanism may be fully automatic; actuated by the pilot; or actuated by the hookman mechanically from some point on the plane away from the jet blast. All methods are being studied at present.

The jet exhaust probably will have no dangerous effect on another plane parked immediately behind it. The fumes and gases emitted by the blast are so nauseating however, that they may restrict a manned aircraft parking nearer than 50 feet behind it. So, even though the plane is only turned up immediately prior to take-off, this would necessitate a wide staggered dispersal of aircraft on deck, if planes were taking off without catapult.

When catapulting, the planes probably won't use their engines to taxi up to take-off position, but will have to either be towed up or automatically conveyed to the spot position by a mechanical conveyor or dolly to conserve on gasoline.

NAVY EXPERIMENTS WITH ARMY P-80 IN RECENT CARRIER TESTS

PROPELLERLESS PHANTOM IS STILL A CURIOSITY ABOARD CARRIER

FD EXPERIENCES NO DIFFICULTY DURING TAKE-OFF FROM CARRIER

New Handling Techniques and Methods Are Under Development for Jet Planes

JETS use an excessive amount of fuel at idling speeds. This feature in itself will prevent deck taxiing to a great extent. However, there may be times when movement of jet planes on deck under own power is necessary, in spite of the exorbitant amounts of fuel used. Therefore, various methods are being studied to eliminate some of the negative aspects of the jet blast in deck handling.

ONE system, would elevate the jet blast over the heads of deck handlers and plane personnel. This would employ a jointed nose wheel which can be broken into an elbow after the plane has been removed from the arresting gear, and will allow the plane's nose to drop in a kneeling position. This would raise the tail and enable the plane to use its jet for taxiing without endangering personnel with the blast. Another method being considered, is a deflector on the jet nozzle. This system would deflect the jet upward and also tend to hasten dissipation of the blast. This deflector would also aid in cutting down the effect of the residual thrust after the throttle has been closed on landing, and might be actuated in unison with the thrust spoiler in the groove. Tailpipe aperture control may boost speed.

Another change that will require some solution, comes from the widely adopted use of tricycle landing gear for jet planes. In the past some propellered carrier planes had tricycle gear, but none has been extensively used aboard ship. Adequate gear has already been developed for handling conventional tail wheel aircraft. Therefore, it is necessary only to modify or revise the existing equipment to the needs of the tricycled jet plane.

The major problem of this configuration is the carrier barrier. Barriers, heretofore, have been so constructed that planes missing the arresting wires crashed head-on into the barrier wires. The pilot was amply protected because he sat well behind the engine, which absorbed the initial shock. The jet plane has moved the pilot into a vulnerable position; consequently the barrier must be such as to effectively stop the plane without endangering the pilot.

The *Phantom* had a barrier arm rigged just in front of the pilot's cockpit, sticking up and forward at a 45 degree angle. Somewhat the same type of hook was also used on the P-80 during its trials. This type of barrier arrestation is being studied, but isn't considered to be the best solution.

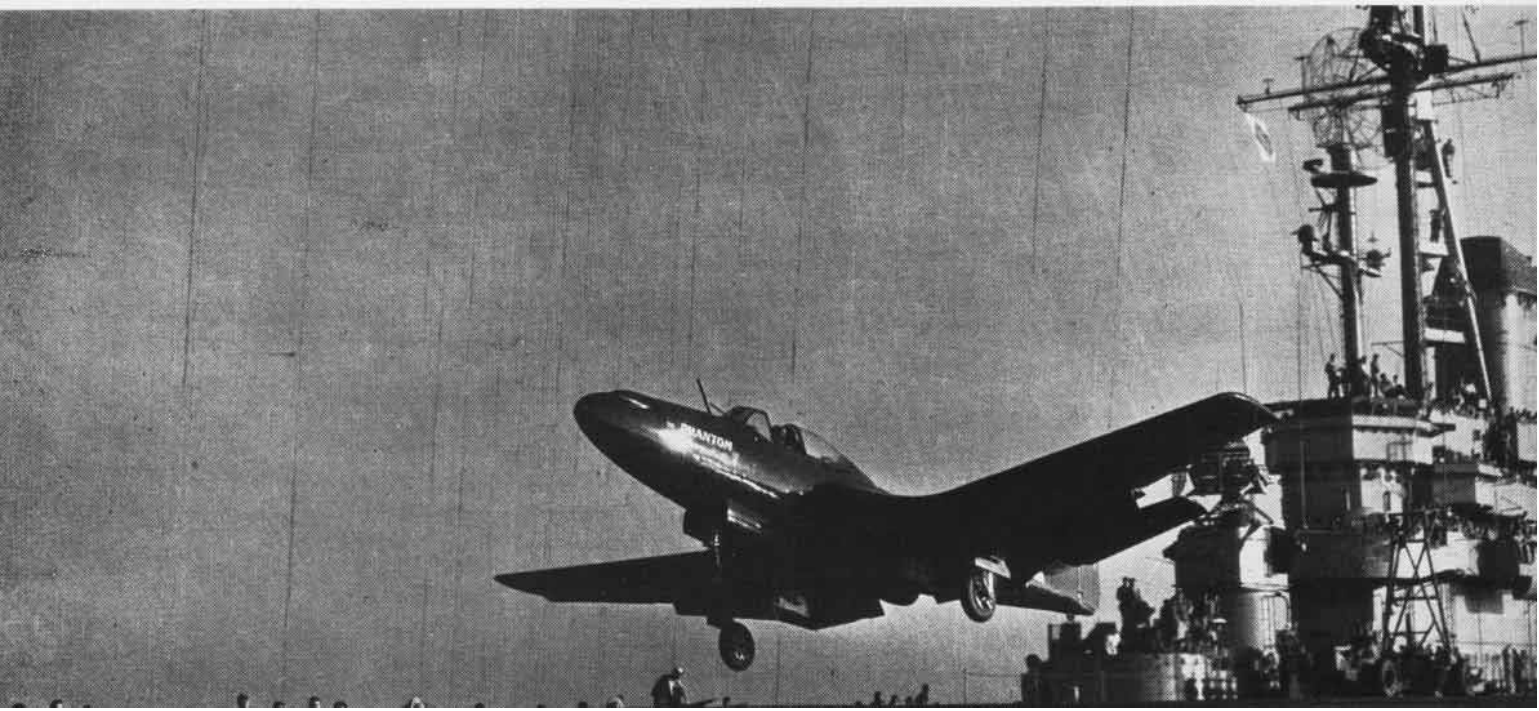
INASMUCH as tricycle airplanes and tail wheel airplanes will be operating together, the development of a new universal-type barrier is needed. This barrier must be suitable for the arresting of both types of aircraft. The immediate answer seems to be in a barrier that will act directly upon the main landing gear of tricycle planes rather than on the engine, and in addition, will be flexible enough to be quickly shifted to act upon the engine of a conventional plane.

A specific barrier has been developed for jet airplanes, but at the present time, it has to be modified in size and proportion for each different type jet plane that is to use it. In principle of operation however, it remains the same.

Ship's Installations, Bureau of Aeronautics, is continuing research on the development of a universal type barrier that can be used on all types of conventional planes as well as various types of jet airplanes.

Due to the large quantity of fuel burned by jet airplanes and the resultant increase in fuel capacity of the new planes, a method of faster fueling is required. The speed with which a plane can be re-armed and re-fueled is one of the controlling factors in the matter of how many planes a carrier can send on a strike. Some present equipment can

PHANTOM USED NO EXTERIOR POWER FOR TAKE-OFF DURING FIRST CARRIER TRIALS; HOWEVER, MOST JET PLANES WILL USE CATAPULT



and will be modified to meet the higher flow necessary.

It is possible that soon the fueling fillers may be moved from the top side of the airplane to the under side. This has certain advantages over the present system. Also the height of some types of future carrier aircraft may restrict overhead operations. With the new system, the supply of fuel can be automatically shut off without spillage. This would minimize the fire hazard materially. It would also be preferable under adverse conditions of weather, wind and darkness. In addition, the same system could be used for both fueling and de-fueling, thereby making the equipment and the airplane attachments simpler and lighter.

The ability of jet engines to use almost any type of fuel, opens promising possibilities in the future type of fuel used. At present, the Navy is using regular aviation gasoline for its jet turbines. This facilitates the problem of logistics and supply where both conventional and jet types are being used aboard the same ship or station—a very important point to be considered during combat operations.

It is quite possible that the jet airplane of the future may use a fuel that can also be used in the ship's engines. This would alleviate the major supply and logistics problem.

New re-arming techniques and mechanisms will have to be developed and old ones modified to re-arm rapidly the jet plane which is considerably lower to the deck than a conventional plane.

The limited endurance of jet planes demands a more expeditious means of plane recovery aboard carriers. Since

WINGS FOLDED, GEAR EXTENDED, FD-1 IS BROUGHT ABOARD FDR

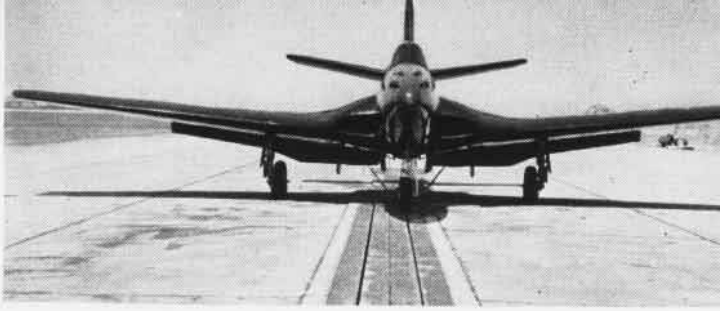
the landing and take-off interval will be shorter, more efficient methods of deck handling will have to be evolved. One means of stepping up the handling will be the use of more efficient and faster tractors and other handling gear.

Some changes may be made in the launching equipment of the catapult. Possibly a new type of retractable hook will replace or augment the present bridle holdback. Heavier loads will be launched at higher end-speeds.

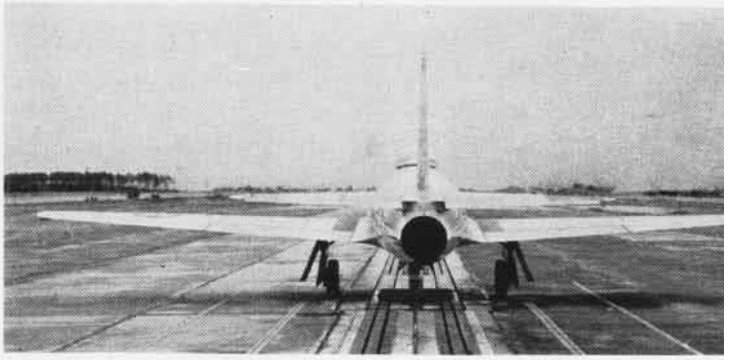
We will have to alter our present conception of aircraft maintenance somewhat, to fit the requirements of the new jet airplanes.

Fundamentally, maintenance of jet turbines and maintenance of piston engines differ radically. Piston engines require periodic checks, constant minor repair and small part replacement. However, the piston engine will run for several hundred hours before complete overhaul or engine change is necessary.

The jet turbine is a much simpler power unit and is not complicated by a great number of critical small parts that require constant replacement or repair between overhaul.



PHANTOM UNDERGOES CATAPULT TESTS AT NAS PATUXENT RIVER



BUSINESS END OF SHOOTING STAR SHOWN ON NAVY ELECTROPULT

However, the overall engine life of the jet engine, is considerably shorter than that of the piston engine. Complete overhaul or engine change is required after a comparatively short period of running time. It takes only a matter of minutes to make such a change, however.

In the past, carriers operating with reciprocating engines carried large quantities of spare parts, but very few engine replacements, and no engine overhaul facilities were necessary. If the present service life of jet turbines is not lengthened, carriers maintaining them will either have to equip and maintain an overhaul shop aboard or carry a large number of packaged replacement engines. Research and development are constantly lengthening the service life of the turbine, and before active carrier squadrons of jet planes are in operation, the overhaul facility or engine replacements may not be necessary.

As for the future training of Naval Aviators in jet airplanes, it will be some time before an active program is inaugurated due to the limited number of jet aircraft available. However, plans are now being formulated to incorporate jet training into the basic flight training syllabus. Cadets will probably go through regular stages of training up to and through propeller-powered fighters, then have a short dual jet training phase. A two-place jet trainer is even being studied by the Navy.

After the dual instruction the student will go into the single-place jet fighter and qualify before going on to Fleet units for further carrier and advance combat training.

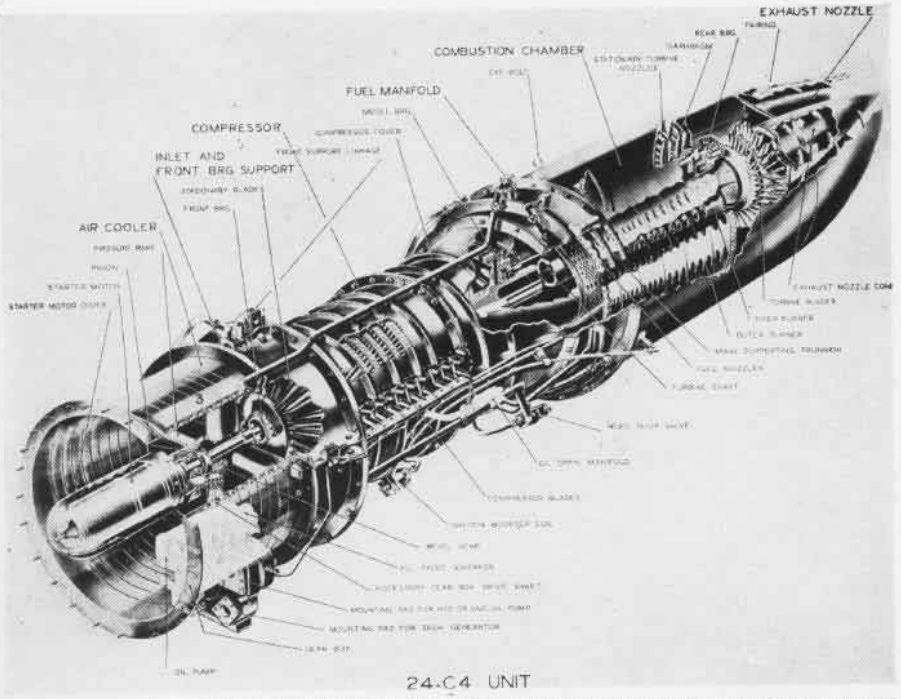
This statement on training is largely conjecture. No definite policy has been established. A dual trainer is just being studied—it may never become an actuality.

These then, are the general problems confronting the active operation of jet airplanes in the Fleet. Although handling changes are manifold and in some cases radical, the basic proven concepts of handling aircraft aboard ship hold good for either jet aircraft or conventional planes. Of course thought and planning will be necessary, but the channels of improvement are straightforward and clear.

The Fighter Design Branch of the Bureau of Aeronautics, Ship's Installations and other branches interested in carrier aircraft, are exerting every effort to solve the task of converting to an all-jet Air Fleet.

The operation of jet aircraft aboard a carrier is just another step ahead in the over-all evolution of Naval Aviation.

POWERFUL NEW JET ENGINE DRIVES FOUR PLANES



NEW NAVY JET ENGINE, 24-C BY WESTINGHOUSE, POWERS FIGHTERS, TORPEDO BOMBER

DETAILS on the 24-C Westinghouse jet engine, destined for use in large number of Navy and Army aircraft under construction or now flying, have been revealed in a restricted classification by Bureau of Aeronautics.

Latest of five different types of jet engines now classified restricted or less, it will power the F6U, F2D, TB3F and F2R-2 aircraft. The other types of jet engines in Navy planes are the 19XB by Westinghouse, I-40 by Allison, and the I-16 and TG-180 by General Electric. The British Nene made by Rolls Royce will be in an experimental model.

Navy designation of the latest Westinghouse turbo-jet engine is the J34-WE. Its light installed weight gives it a favorable weight-power ratio since it turns out 3,000 pounds thrust. The engine is 9′ 5″ long and has a diameter of only 24″. Being an axial-flow type, it presents far less wind resistance than centrifugal-flow engines, which run up to almost twice as wide.

Two of the engines are installed in the McDonnell XF2D-1. In the Grumman XTB3F-2 it will be used as a booster engine to augment the R-2800-34 reciprocal engine in the nose. So that it can be compared with jet engines in other Navy aircraft, the following compilation gives a few pertinent figures on each:

J-34-WE (24-C) –Length 120 inches, width 28 inches, military thrust 3,000 pounds, military rpm 12,500.

J-33-A-23 (I-40) –Length 103 inches, width 50 inches, military thrust 4,250 pounds, military rpm 11,700. U. S. most powerful.

J-31-6 (I-16)–Weight 865 pounds, 70 inches long, 41 inches wide, military thrust 1,610 pounds, military rpm 16,500.

J-35-C3 (TG-180)–177 inches long, 38 inches wide, military thrust 3,750 pounds, military rpm 7,700.

J-30-WE (19XB) –Length 75 inches, military thrust 1,600 pounds, military rpm 17,000.

Nene (X542-TT) –Weight 1,550 pounds, length 103 inches, width 50 inches, military thrust 4,500 pounds, military rpm 12,000.

The first jet engine to be used in a Navy aircraft was the General Electric I-16, installed in the tail of the Ryan

THE NAVY'S JET ENGINES

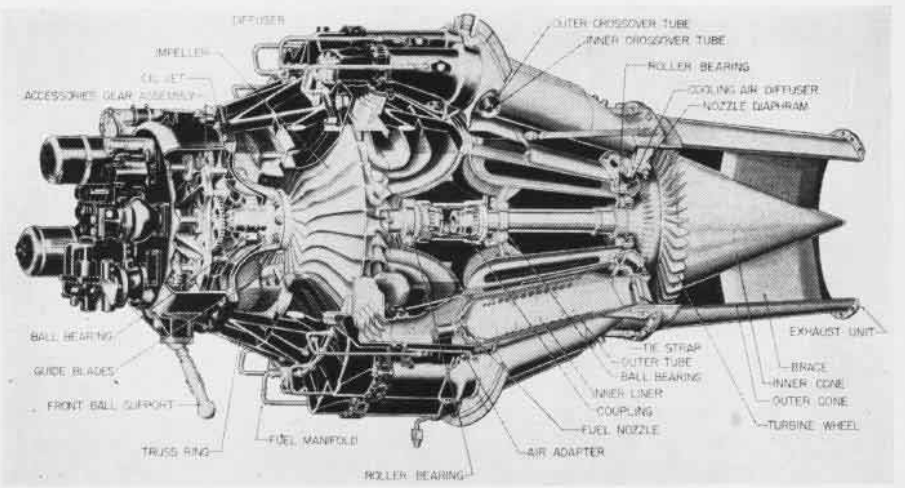
Navy Designation	Planes	Mfgr's Designation
J-30-WE	FR-1	I-16 (GE.)
	F2R-1	
J-31-6	FD-1	19XB (West.)
J-33-A-23	P4M	I-40 (Allison)
J-34-WE	F6U	24-C (West.)
	F2D	
	TB3F	
	F2R-2	
J-35-C3	XFJ-1	TG-180 (GE.)
	D-558-I	

Fireball to give it added punch to boost the reciprocating engine in the nose. The next Navy plane to come out with a jet was the twin-jet McDonnell FD-1. It had a pair of Westinghouse 19XB's in its wing roots as its sole power plant. This plane was the first to make a take-off from an American carrier, although an FR-1 previously had landed in an emergency using only its jet engine.

The British Derwent V is smaller than the Nene, weighing 1,250 pounds. It turns out 3,500 pounds thrust at 14,600 military rpm. It is only 60 inches long and 43 inches wide. Both engines are centrifugal flow types. The record-holding Gloster *Meteor* had the Derwent jet as a power plant.

The British Navy's *Vampire* had the DeHaviland Goblin engine and later versions will have the Nene. The same plant is in the jet *Spiteful* fighter, the Armstrong-Whitford flying wing, and the *Lancastrian*. The latter has two Nenes and two *Merlin* engines and flew to France recently on its jets.

It is expected that the Westinghouse J-34-WE will power a large proportion of high performance military aircraft for the next few years. Additional thrust may be available by using liquid injection or tail-pipe afterburning.



ALLISON I-40 ENGINE IS IN P4M AND P-80; MOST POWERFUL ENGINE IN U.S. PLANES

D-558 WILL FLY SOON

TWO BLUNT-nosed red aircraft with stubby wings were put on display for the first time at Douglas Aircraft Co., in Santa Monica, Cal., for Navy and public alike to view. They were the D-558 *Skystreak* research planes, built to explore flight problems of the subsonic and transonic speeds.

This spring at Muroc Lake, a test pilot for Douglas will put one through its paces. Powering the dum-dum-nosed plane is a GE TG-180 jet engine turning up enough power to run 75 ordinary automobiles.

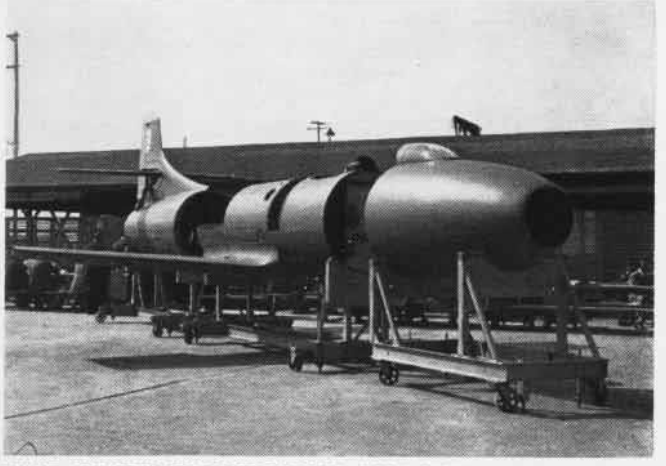
Take-off and landing speeds approximate present-day fighters. Wing loading will be 65 pounds at take-off and 56 pounds a square foot on landing, about the same as the Douglas A-26 bomber. Its stubby wings are only 25 feet wide; its length 35 feet and height 12 feet. To give it structural strength to withstand high speeds, it is 60% stronger than current fighter designs.

Wing and control surfaces are high strength aluminum alloy. Fuselage is lightweight magnesium alloy.

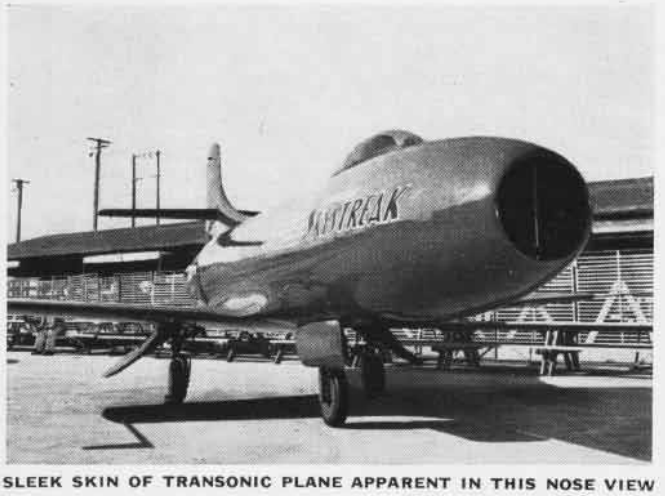
Special wheels by Bendix and nylon tires by Goodrich will carry the 9,750-pound aircraft. Special small tires are necessary due to the thinness of the wing into which the wheels retract.

The pilot's cockpit in addition to being jettisonable is provided with pressurization, insulation against heat and cold, refrigeration and heating. It is equipped for a G-suit and oxygen. Special instruments weighing 500 lbs. are located behind the cockpit and in 400 other locations to measure air loads. With tip tanks, fuel will last 1½ hours.

NAVY, PUBLIC VIEW TWO D-558'S ON DOUGLAS RAMP AT BURBANK



PILOT ESCAPES BY DISENGAGING NOSE SECTION. BAILING OUT



SLEEK SKIN OF TRANSONIC PLANE APPARENT IN THIS NOSE VIEW

CIGAR-SHAPED FUSELAGE, HIGH RUDDER FEATURE 'SKYSTREAK'

GRAMPAW PETTIBONE

Tower Troubles

Not all accidents are the result of pilot error or material failure. In this month's group of accidents a TBM was returning from a night towing mission and requested landing instructions. The tower informed the pilot that runway 28 was the duty runway but had no lights and instructed the pilot to use 04 saying that he would have a 12 knot left crosswind. He did not tell the pilot that only the last third of runway 04 was lighted and that the green and amber end of runway lights were inoperative. After three passes at the runway the pilot finally landed with approximately 1,000 feet of runway ahead. He was unable to stop and in the nose-up beyond the end of the runway, his crew member received a slight head injury.

Grampaw Pettibone says:

There must have been a tense acey-deucey game going on in the tower for the operator to allow a pilot to make three passes at the field without even giving him the minimum information which he needed to make a safe night landing. If the wind was down runway 28, it would have been better to instruct the pilot to land on runway 22. Beside being more nearly into the wind, he would also have had the advantage of having the first third of the runway illuminated instead of the last third. You boys in the tower have a mighty important job to do, especially during night operations. The pilots are depending on your judgment and on the accuracy and completeness of information you give out—DON'T LET THEM DOWN.

F4U Fatal Rates Drop

Grampaw Pettibone's chest is out these days as a result of the recent drop in the number of fatal accidents in the F4U type aircraft.

During the first six months of 1946 the F4U had the highest fatal accident rate of any Navy plane in general use. There were 51 fatal F4U accidents in this period and Grampaw hit the ceiling. An all-out campaign to eliminate unnecessary accidents in this type aircraft was set in motion.

It was recognized that the F4U was a fine, high-performance combat aircraft, but that it required top-notch flight technique for safe operation. By restricting its use (except in Advanced Training) to pilots with previous fighter experience, and by emphasizing to these

pilots the necessity for a thorough understanding of all pertinent Technical Orders, the fatal accident rate was cut in half during the next six months. The number of fatal accidents was reduced from 51 to 19, despite the fact that the F4U was employed extensively in carrier operations in the latter period.

Tail Hook Tied Up!

An F4U pilot writes of this experience:

"Returning to the carrier after a routine simulated strike, I found that I was unable to lower my hook. . . . After raising and lowering the lever several times and getting three waveoffs, I left the pattern and joined up on another plane for a visual inspection. This inspection showed nothing, so I pulled the CO_2 bottle to see if it would help lower the hook. This also failed. I landed aboard as I had only 40 gallons of gas left and the nearest land was 150 miles away. The approach and landing were normal and I used brakes to attempt to stop, but engaged the #4 and #5 barriers.

"Upon examination after the crash, the hook was found to be tied up with 21 thread line. This probably occurred when the plane handlers were moving the plane and the hook was down due to a lack of hydraulic pressure the previous day."

Grampaw Pettibone says:

They're still looking for the character who pulled this one, and the plane captain and pilot of that F4U have a brand new understanding on what a pre-flight check consists of.

Because of the limited time allowed for manning planes aboard a carrier, pilots must depend on their plane captains to perform a thorough check prior to each flight. A pilot is responsible for his plane, but if he personally checked everything before each flight, he would rarely get in the air on time.

Incidentally, whenever a hook is tied up for any reason, a red flag should be attached to it.

F4U Stalls in FCLP

Survivors from spins and stalls at low altitude are few and far between, but last month an F4U pilot lived to tell about this one.

"I was the first airplane in the FCLP pattern and at 1408 I started my turn into the crosswind leg of my first approach. My airspeed must have been insufficient because the plane just settled to the ground. There was no violent action such as the airplane dropping off suddenly on the left wing. I applied some throttle, and tried to bring the nose up but to no avail."

The plane struck the ground on the left wing in a nose down attitude, crumpling the wing and almost tearing the engine and nose section away. The aircraft then cartwheeled on its nose, and ended up sliding backwards on its belly as the landing gear carried away.

Grampaw Pettibone says:

This accident is an example of what can happen even to an experienced pilot when he neglects to maintain proper flying speed. This pilot had close to 1800 flight hours of which 450 hours were in the F4U, and he had logged 49 successful carrier landings. He "doped off" for a minute in a routine operation and, except for a sturdy cockpit structure and proper use of his safety belt and shoulder harness, he wouldn't be here to tell about it.

The day was foggy, damp, and cold
But our boy Pete was feeling bold.
He didn't remember to use preheat
So beneath this stone lies Ensign Pete.

SNAFU

While orbiting the carrier waiting to come aboard, a section leader noticed oil coming from the oil breathers of his wingman's SB2C. He notified the division leader who obtained permission from the ship for the plane experiencing the engine trouble to land first.

The ship signaled "prepare to land" and being number one to land, the Ensign left his formation and followed standard carrier procedure, breaking into the landing pattern well ahead of the ship. At this time engine instrument readings were normal.

The ship had been landing planes previously and there were other aircraft, both SB2C's and TBM's, in the landing pattern. As the Ensign started his downwind leg, the oil pressure dropped from 84 to 40 pounds and he notified the ship that he could not take a waveoff. As he approached the groove, the TBM ahead was landed and he was given a waveoff because of a fouled deck.

During the waveoff the prop governor failed and the oil pressure read 35 lbs. RPM was reduced manually and the ship was informed that a landing must be made immediately. At this time the ship instructed all other planes by radio to clear the landing pattern until after the emergency.

The Ensign was abeam the ship on his downwind leg and so informed the ship. Oil pressure was now zero. Another SB2C with radio not operating properly was in the groove and received a cut from the LSO who thought that this was the plane in trouble. Due to a fouled deck a second waveoff was given to the plane with the oil leak.

As throttle was added the engine failed and the plane settled into the water before the wheels could be raised and flipped over on its back.

Lady Luck got the pilot out without a scratch.

Grampaw Pettibone says:

It looks to me like more than the deck was fouled here. A radio is a big help in handling an emergency but it should not be depended on to do the whole job. The Yoke flag should have been hoisted at the ramp to notify all planes other than the one in trouble to clear the landing circle immediately. In addition the pilot should have identified himself visually to the LSO by rocking his wings. By the way, fellow, I think you were stretching your luck pretty far to attempt that second approach after the oil pressure went to zero. From there on your engine was operating on borrowed time—you knew it was going to quit, but you didn't know just when. I think that prudence and good judgment would have dictated an immediate water landing, wheels up and into the wind, rather than making another approach.

The Unbreakable Pilot

Two F7F-2N's took off on a contact night navigation training flight. En route both planes encountered rain and poor visibility. After one pilot decided to return to base, the second plane continued on alone. This plane gradually drifted off course and as the ceiling continued to lower, the pilot found himself on solid instruments. After a time he was able to climb out on top.

At this point he was receiving a clear off course signal from the range station at his destination. Instead of requesting permission to orientate himself and perform a standard instrument approach, he continued in the general direction of the station looking for a break in the overcast. Unable to find a hole, he decided to drop down below the overcast and look around. Breaking through at 4,000 feet indicated, but actually only 900 feet above the surrounding terrain, he started a wide circle to the right.

Just at this point the gasoline tank that he was running on ran dry. While he was endeavoring to switch to a full tank and restart the engines the aircraft crashed at a speed in excess of 200 knots. Observation of the terrain at the scene of the accident revealed that the totally destroyed aircraft hit the ground in an almost flat right turn.

The right wing on initial impact leveled the attitude of the plane whereupon it bounced for 200 yards shedding parts as it went. Miraculously, the cockpits, although severed from each other, remained intact and the pilot and passenger suffered only minor contusions and lacerations.

Grampaw Pettibone says:

Boy, what a guardian angel you must have. As a child I'll bet you used to jump out of third-story windows just to test your luck. Of course, in this case you destroyed a high performance fighter which cost the Navy well over $100,000 and you also demonstrated that you lacked the necessary "gray matter" to be a Naval Aviator. Well, maybe you can get a job with the circus. They probably have to hire an occasional replacement for the fellow they shoot out of the cannon and with your luck you'd last indefinitely.

GRAMPAW'S SAFETY QUIZ

ALL AVIATORS *should know the answers to these questions. In the air, the penalty for not knowing may prove fatal. If you miss an answer on the ground, penalize yourself by looking up the reference.*

1. What should you do first, if you find yourself in an inverted spin in an F4U?
2. In the event that you are unable to lower your wheels as a result of a hydraulic system failure in an F4U-4, you should next try (a) the CO_2 system; (b) the hand pump.
3. What is the difference between normal rated power and take-off power?
4. If you are in position to take off and receive a red light from the tower, what should you do?
5. Now that the war is over Naval Aviators can expect to live about as long as the average civilian. True or False?

(Answers on Page 40)

Keep the Stick Back

Case #1. F8F pilot taxied out for take-off, turned to a crosswind position and started mag check. At 2350 RPM the tail left the ground and prop hit runway.

Case #2. TBM-3E pilot parked 45 degrees out of wind, checked mags and then revved up to 32 Hg for power check; tail came up and prop hit runway.

Grampaw Pettibone says:

These are just two out of more than 20 similar accidents in the past year. Propellers for today's high performance planes often cost upwards of $2000.00, so don't forget the rules you learned in primary flight training. Before checking mags, turn as nearly as possible into the wind and hold the stick all the way back. Look behind to make sure that your slipstream won't embarrass somebody else. If the tail starts to rise, reduce throttle immediately and, if clear ahead, release brakes to allow the plane to roll forward a few feet.

DID YOU KNOW?

NEW SIGNALS AID IN RESCUE

A THIRD type of survival and rescue signals has been announced by Airborne Equipment division of BUAER to supplement the life raft paulin signals and ground/air emergency code previously reported. The new ones involve a series of signs which a downed aviator can use to convey his wants to a rescuing plane overhead.

As seen from the accompanying chart, the signals are in general similar in "message" to the other two types. First of the emergency signaling codes to be announced was the one using the yellow and blue paulin included in life rafts (NANEWS, Nov. 1, 1944). By folding this in various patterns, personnel seeking rescue can communicate with overhead observers.

The next set to be announced was the ground/air emergency code to amplify distress signals. By scratching the code's marks on sand or earth or laying out strips of cloth, the pilot can make his needs known. This code appeared in the July, 1946 issue of NANEWS.

Technical Order 3-47 issued by BUAER provides these three types of Navy and Army standard signaling codes be made available in the following rescue equipment: multi-place life rafts, pararaft kits, packet rafts, parachutes, droppable search rescue kits and be posted on aircraft chartboards or in the cockpit where the pilot can read it easily.

Arrangements have been made to include the three codes on one piece of waterproof paper and a sufficient quantity is being prepared to permit installation in all gear mentioned above. Supplies will be sent to NSD Oakland, NAS Norfolk, Seattle, Alameda, San Diego, Pensacola, Quonset Point, ASD Philadelphia and Aviation Supply Annex, Oakland, the latter two places for stock and the rest for distribution to the fleet and training activities.

Naval Actions in World War II

First Volume in Full History Is Issued

The *History of United States Naval Operations in World II* is being written by Samuel Eliot Morison, Capt., USNR, Professor of American History at Harvard University. Volume II of the 14-volume complete work was published by Little, Brown and Co. on 18 February 1947 at a price of $5.00 per copy. This volume, the first to be issued, is entitled *Operations in North African Waters*, 1942 to June 1943.

Volume I, *The Battle of the Atlantic, 1939-1943* is scheduled for release in August, and Volume III, *Pacific: The Defensive Phase, 1941-42 (through Midway)* in December. Titles of the other volumes, to be issued during the next three years, are as follows: IV. *Pacific: Offensive-Defensive Phase, 1942-43 (Guadalcanal, Central Solomons and S. W. Pacific)*; V. *Pacific: Breaking the Bismarck's Barrier, 1943-44*; VI. *The Conquest of Micronesia, 1943-45*; VII. *New Guinea and the Marianas, 1944*; VIII. *Mediterranean Operations, 1943-44 (Sicily, Salerno, Anzio)*; IX. *The Battle of the Atlantic, 1944-45*; X. *The Liberation of France, 1944*; XI. *The Liberation of the Philippines, Leyte through Mindoro*; XII. *The Liberation of the Philippines, Luzon, Visayas, and Mindanao*; XIII. *The Liquidation of the Japanese Empire, 1944-45*; XIV. *Appendices, Tables and General Index.*

The major portion of the history, covering research into records, interviews with officers, and the witnessing of actual operations was completed by the author while on active duty. Having resumed his academic duties at Harvard, he is now completing the history on a part-time contract with the Navy Department.

The contract for publication stipulates that royalties from sale will be paid into the Treasury of the United States. The money will be available to the Office of Naval Records and Library. BUPERS will distribute copies of Volume II to a limited number of Ship and Naval Station Libraries. Otherwise, any activity desiring copies should follow the usual procedure for obtaining books, as the Office of Naval History has no copies for distribution.

Loran Loss Hampers NATS VR-5

Navigation Difficult in Alaska Areas

VR-5, SEATTLE—Closing down of several key Loran stations in the Alaskan area has hampered navigation operations of this NATS squadron because it leaves inadequate Loran coverage over major portions of its northern routes. In some areas no ground-wave coverage is available, while in other areas Loran lines from existing stations are so nearly parallel that reliable fixes cannot be obtained.

Because the Loran system of electronic navigation has proved less affected by error-producing precipitation static than the DF system, and because northern celestial operations are hampered by almost constant cloud cover, this squadron is interested in fully exploiting the Loran system.

Navy To Pick Boxing Champions

San Diego Will Be Tournament Host

A fighting Navy's fight champions will be decided in eight weight classes in an all-Navy boxing tournament scheduled in San Diego June 1 to 7.

Non-commissioned personnel on active duty in the Navy or Marine Corps are eligible to participate. Men with professional fight experience are excluded.

To insure Navy-wide participation, BuPers Circular Letter 33-47 sets up the following command organization for elimination boxing tournaments:

ComServPac is host to all activities afloat and ashore west of Hawaiian islands, ComFourteen, and Fleet units on the West Coast not participating in district tournaments

ComServLant is host to Atlantic Fleet and shore stations including ComTen and ComFifteen.

ComThree, at New York City, is host to ComOne and ComFour.

ComFive, at Norfolk, is host to the Potomac River Naval Command, the Severn River Naval Command, and ComSix.

ComNine, at Great Lakes, Ill., is host to ComSeven and ComEight.

ComTwelve, at San Francisco, is host to ComThirteen and ComSeventeen. Fleet units based in district ports are expected to compete in local elimination tournaments subject to ComServPac's approval.

ComEleven, at San Diego, will with the agreement of ComServPac, be host to Fleet units based in district ports.

Coast Guard personnel are invited to participate in the elimination tournaments. Coast Guardsmen that win area tournaments will represent those commands at San Diego in the all-Navy finals. All area elimination meets must be completed before 17 May and the names of winners submitted to BuPers by speedletter.

Champions will be determined in eight weight classes. An allowance of three pounds above and two below authorized weight is permitted. The tournament will be conducted on a single elimination basis. Regular AAU rules will govern the three two-minute round matches.

Naval Air Transport Service is authorized to provide transportation for participants in the boxing tournament where practical.

Navy Seeks Electronics Mates

44-Week Training Course Given To Men

In view of the critical shortage of aviation electronic technicians mates, the Navy has urgently requested applications from regular Navy personnel to enroll in aviation electronics basic maintenance course, according to AlNav 37.

Applicants must have at least 2½ years obligated service from the date of entry into the school and be qualified before acceptance in arithmetic and mechanical knowledge. BuPers declared certain men will not be eligible, including personnel previously graduated or declared inapt for radio materiel training. Others ineligible are chiefs, fire controlmen, special artificers, areographers mates, photographers mates, parachute riggers, storekeepers, yeomen, printers and all specialist ratings.

NATS Boasts High Safety Record

Service Had No Fatal Crashes Overseas

The Naval Air Transport Service, flying over a network of routes second only to one commercial airline in mileage covered, boasts a safety record second to none. The service uses more R5D's and logs more hours in them than any commercial airline.

In almost four years of R5D operations by NATS, ending 1 January 1947 when a high of 172 planes were operated during the war, only one fatal accident took place. During that time the R5D's flew about 68,000,000 plane miles. The one accident might well have been prevented by Ground Controlled Approach now in operation at all NATS bases.

Since April 1946, when the MARS flying boats began a schedule of two round trips per week from Alameda to Manila, over 1,000,000 plane miles have been flown with an average payload of 20,000 lbs. per plane, for a total of almost 10,000,000 ton miles. No accidents have occurred in this type of aircraft.

NATS' overseas operations are almost half as great as the total for all commercial airlines overseas. NATS flew 473,000,000 passenger miles in 1946 as against 1,081,000,000 for commercial. This included 25,000,000 plane miles for NATS and 60,000,000 for commercial. Commercial operators had two fatal accidents overseas during the year, resulting in a rate of 3.79 passenger fatalities per 100,000,000 passenger miles, whereas NATS did not suffer a fatal accident overseas.

Rocket Firing Sinks Saipan LCT

Squadron Uses Tiny Tims on Old Craft

VF-14-A, Saipan—Temporarily based ashore at Kobler Field, this squadron completed an intensive rocket-firing course, using SCARS, 5" HVAR's and 11.75" *Tiny Tims*.

A nearby rocket range was used for glide angle calibration and firing of the 5" and SCAR rockets. Pilots then took a hop carrying two 100-gal. belly tanks full of water, totaling an overload of 1,700 pounds. This was to simulate carrier take-offs, with a *Tiny Tim* plus 200 rounds of ammunition per gun.

Aboard the Princeton on a four-day operating cruise, the squadron was able to apply the rocket training to good avail with strikes against Pagan Island. Back in the Saipan area, each pilot made a carrier take-off, carrying one *Tiny Tim*, plus a half-load of ammunition. The target was a surplus LCT. By the time the second launch of VF-13-A and VR-14-A reached the target, it was sinking fast and only the bow protruded as an aiming point, but it served well enough for the squadrons to sink it.

Some Doubt exists in the minds of newer members of the aviation Navy whether aircraft ever were launched athwartships on carriers. Old hands can remember well such scenes as this TBF leaving the H2 catapult on the old Yorktown. The catapult could toss off a plane either to starboard or port. The Enterprise and old Wasp also had hangar deck catapults and some CV's had H4's but they were abandoned because of crosswind launching difficulties and pilots' dislike and both catapults were put on the flight deck.

NATS Rushes Gear to 'Highjump'

Radar Equipment Flown to Canal Zone

One of the lesser-publicized activities of Naval Air Transport Service was its feat of rushing 25 tons of last-minute urgent cargo to the task force headed for the Antarctic, picking it up all along the Atlantic Coast and delivering it to Coco Solo, Canal Zone.

At Norfolk the planes collected 37,500 pounds of cargo, plus 7,279 at Patuxent and Washington, 2,192 pounds in New York and 125 lbs. in Jacksonville. The gear consisted of special radar cameras, radar camera film and cold weather gear.

The assignment called for considerable tracking down and recovering by transport officers, including a small but important part which had been delivered to the wrong place. Four special flights got the shipments to Panama in time to catch the *Highjump* ships before they sailed.

Marines Paint CVE's Deck Plans

Ramp Serves for Practice Sessions

VMF-452 — This Marine fighter squadron on the *Bairoko* (CVE-115) has devised a method to get faster coordination between deck handling crews and pilots by means of a scale model of an aircraft carrier deck painted on the ramp at the flight line.

The elevators were outlined with paint and the barrier and landing wires painted on. This gives handling crews practice at spotting, parking and directing aircraft, and gives pilots practice at quickly obeying taxi and operating signals.

It is felt this training will make for faster and smoother operating procedure aboard ship while on short cruises where time is limited.

ADM. DUNCAN LED ESSEX IN WAKE RAID

Adm. Duncan Is New Air Deputy

Former Skipper of Essex Gets CNO Post

The new Deputy Chief of Naval Operations (Air) is Vice Adm. Donald B. Duncan, who succeeded Vice Adm. Arthur W. Radford following the death of famed wartime commander Admiral Marc. A. Mitscher.

Adm. Duncan was deputy and chief of staff to the Commander in Chief, Pacific Fleet, before assuming his Washington duties. Adm. Radford succeeded Vice Admiral William H. P. Blandy as Commander, Second Task Fleet, which is under the Atlantic Fleet command.

Adm. Duncan was designated a Naval Aviator in 1921. In December, 1941, he was on the staff of Fleet Admiral Ernest J. King. A year later he assumed command of the Carrier U.S.S. *Essex* and participated in the aerial raids on Marcus and Wake. Following this duty he rejoined the staff of Fleet Admiral King as Assistant Chief of Staff (Plans). In July 1945, Adm. Duncan was appointed a Carrier Division Commander in the Pacific.

Philippine Squadron Hunts Sub

Practice Training Sharpens Technique

VP-MS-3—Value of constant training to maintain a high state of efficiency in a squadron was demonstrated recently when three of our aircraft participated in a night search, tracking and attack exercise with the submarine U.S.S. *Chubb* off north Luzon.

The exercise offered training in celestial navigation, radar interpretation and tactics. Planes returned to base to land after dawn the following morning. At the post-flight conference which was attended by all parties concerned, including VP-HL-9 pilots who also participated in this exercise, the entire operation was discussed and analyzed with the operations officer, Fleet Air Wing 10.

Night flight operations were facilitated by laying out of a sealane which avoided unlighted wrecks which had been bombed or sunk during the war. Part of the old sealane was used for anchorage of small craft. Under those conditions it was unusable except in an emergency, with an experienced crash boat officer to guide the incoming plane to a landing.

The sealane hazards were properly lighted and small craft moved to another anchorage. Seadrome lights from the *Salisbury Sound*, AV-13, were laid out on another sealane, enabling the squadron to take advantage of prevailing seasonal winds.

Alameda Planes Spray Bay Area

DDT Spearheads Operation Mosquito Bite

NAS ALAMEDA—An R4D from this station recently commenced "Operation Mosquito Bite" by spraying over 9,000 acres of marsh lands with DDT in solution with diesel oil. The operation is jointly sponsored by the Navy and Marin, Sonoma, Napa and Solano Counties.

The plane sprayed three swaths six miles long and 150 yards wide over San Pablo Bay area between Mare Island and the mouth of Sonoma Creek. On the first flight samples of small fish, shrimp, mosquito larvae and wild fowl were placed in the area to determine effects of DDT upon them.

Operating from Hamilton Field, the R4D is loaded for each flight with 800 gallons of DDT mixed up by Mare Island Public Works Department. Officers in charge plan to conduct sprayings three or four times a year if necessary. An OY-1, now being outfitted to carry 42 gallons will be used to spray sloughs, draining canals and rivers.

i Qute a *little difference between the Lockheed* Constitution *and riding on the back of a camel in the middle of the desert? That's probably what His Royal Highness Saud al Saud, crown prince of Saudi Arabia, was thinking as he descended from the loading ramp of the big Navy transport at Burbank after an inspection trip through the big R60 aircraft*

LIVES AND PROPERTY ARE SAFEGUARDED BY HURRICANE TRACKERS IN STURDY PRIVATEERS

HURRICANE HOUNDS

AVIATORS are lined up right along with farmers as a group vitally concerned with the antics of old man weather. Whether you're anxious about a deep freeze on fruit still in the bud, or trying to get a plane down through soupy fog, there's a helpless feeling involved.

But while the agriculturists can't do much but hope and cuss, quite a few airmen are at least getting a chance to keep the weather, in its more violent forms, from sneaking up on an unsuspecting countryside.

With the all-out drive for all-weather flying taking front page space in current newspapers, emphasis can well be given to the Navy's meteorological investigations. From the experts working on aerological research and development in Washington, to the aerographer's mates making routine observations on air stations, this little-publicized part of the naval organization is doing work of far-reaching value. Wartime pressure spurred their research and required accuracy and precision far beyond the demands ordinarily made on the weatherman's prescience.

During the war, developments were rapid in increased knowledge about weather phenomena and techniques of forecasting conditions. For example, it had been thought previously that only about a half dozen typhoons occurred in the Pacific during a year. Real coverage, however, showed that actually some two dozen such storms could be expected annually in the Pacific area. They no longer went unobserved.

WITH THE application of radar to storm detection, the hurricane hunters had an uncanny aid in their tracking job. Not only ships and planes appeared on the radar scopes; precipitating clouds showed up in characteristic patterns. The approach of frontal systems could be observed 150 miles away and timed exactly. Even the structure of a hurricane, with its calm, precipitation-free eye in the center, was distinguishable on the scope. An echo-free circle within the spiral arrangement of the typhoon's storm clouds, located the center.

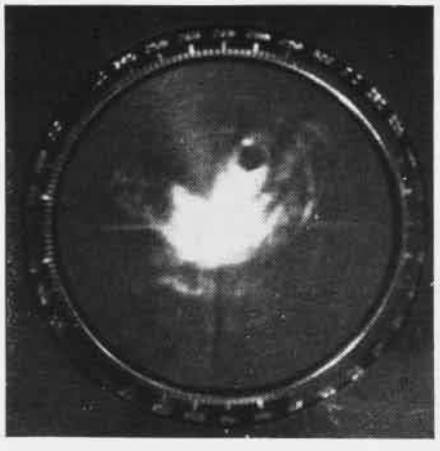
At the present time the Navy has two squadrons concentrating on the job of keeping track of what the elements are up to. Formerly designated weather reconnaissance squadrons, they now are known officially as meteorological squadrons. The Pacific area is covered by VPM-1 with its home base at Guam. This outfit is carrying on with typhoon tracking assignments such as those previously reported (NANEWS April, November, 1946).

On the Atlantic coast the storm patrol work is handled by VPM-3. Within a week after this squadron came into being as Weather Reconnaissance Three, on 16 May 1946, it was transferred by CNO despatch orders to NAS MIAMI for duty XRAY. During the next five months, over a thousand hours were logged by seven planes on flights into suspected and actual hurricane areas. Over 150 hurricane patrol flights were made, with Master Field, Miami, as the main base and a detachment stationed at NAS SAN JUAN, P. R.

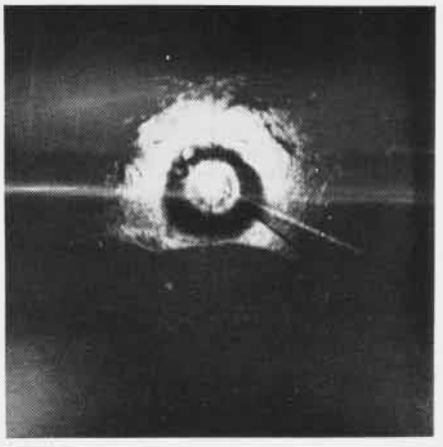
For the inside story of what hurricane patrol duty is like, here follows a play by play account from VPM-3 of one such flight:

The aerologist slowly straightened from poring over the latest weather chart and turned to the aerographer's mate on duty: "There's something brewing in the Gulf, all right. Alert the standby flight crew of Weather Three for an early morning take-off."

With these words a complex machine was set in motion. The wires connecting the Navy Hurricane Weather Central, Miami, the Army Air Forces Weather Squadron, and the United States Weather Bureau began humming with plans for investigating and tracking the storm, if and when it developed.



CALM OF "EYE" SHOWS ON RADAR SCOPE



HURRICANE RADAR VIEW; PLANE IN "EYE"

VPM-3 CHARTED ITS HURRICANE PATROL FLIGHTS IN VIVID DETAIL

EARLY on the morning of 6 October the squadron area came to life. Gas and oil trucks rolled alongside a sleek, dark blue *Privateer*, and a ground crew loaded the plane's gas tanks to 2,300 gallons. All loose gear was either removed from the plane or secured to bulkheads or deck. The flight crew checked the plane and the operation and calibration of the many special instruments aboard. Flight rations were secured from the galley.

On the parking line a sentry, just relieved, turned to a member of the ground crew: "That sure is a helluva-lookin' plane—turrets missin'—gadgets all over it. What the hell is it?"

With a grin that mingled pride and patience, the crewman explained what happens to a PB4Y-2 when it becomes a weather plane. "That tear-drop job on the starboard bow, for instance, contains the wet and dry thermometers, and the top turret gives the weather guesser a clear view in all directions. The armament has been removed, of course; makes room for special navigation and weather instruments. Those letters 'HP' on the side of the bow stand for 'Hit Parade,' our radio voice call.

"If you look inside you'll find all the comforts of home in the after-station—bunks, and a galley with stove and icebox. Hurricane chasing trips can last a long time. With a full gas load, including bomb-bay tanks, she'll stay in the air over twenty hours. She's a honey, all right! Has to be to take the beating a hurricane can hand out!"

The chocks were pulled at 0600 local time, and the big plane slowly turned and headed down the taxi-way. Then came the voice over the inter-com, tower instructions, a last-minute check, and the plane roared down the runway.

The Squadron Duty Officer was altering the Direction Finder Network, giving the frequencies assigned for the flight and the approximate flight track, so that fixes could be obtained, if needed, on the plane's position during flight.

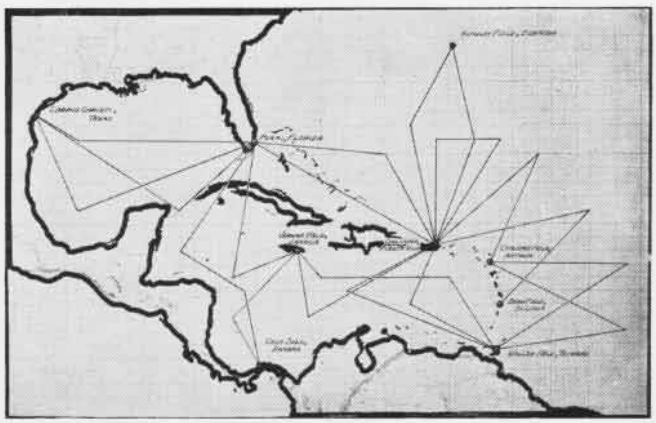
At 5,000 feet the pilot leveled off. Immediately the aerologist was busy preparing the first weather observation, including—among other items—position, time, barometric pressure, true altitude, temperature, humidity, visibility, turbulence, types and amounts of clouds, state of the sea, direction of swell, and force and direction of the winds at surface and flight altitude.

CALLING upon the knowledge gained by special courses of instruction and by previous experience, the aerologist prepared a true and complete picture of the prevailing weather conditions, encoded this information on a special form, and handed the message to the radioman. He, in turn, transmitted it to one of the many military, naval or CAA stations guarding the frequency in use. All communication stations in the area had previously been instructed to be on the alert for these messages, since lives and property are dependent upon the promptness with which storm reports are received.

The plane continued at 5,000 feet, headed for Point Able. Soon the reports received by the Weather Central indicated backing winds of 25 to 30 knots at surface and at flight altitude, with intermittent rain and showers. The flight was on instruments an increasing percentage of the time. Barometric pressure was dropping slowly but steadily at a rate of 4 millibars per hour. From these reports the Officer-in-Charge of the Weather Central plotted the approximate position of the storm and, in conjunction with the Army Air Force and the U. S. Weather Bureau, issued the first advisory.

Things were busy aboard the plane. The pilot, in accordance with pre-flight instructions, was keeping the plane on the heading necessary to hold the wind on the port quarter, and slowly lowering to 500 feet, the altitude previously determined to be least turbulent. The co-pilot was keeping a close check on altitude, carburetor air temperature, and cylinder head temperature; while the navigator moved swiftly from driftmeter to Loran gear to chart table. His eyes glued to the scope, the radar operator was constantly adjusting his gear for best reception. The radioman lifted his hand from the key and, closing his mike button, reported: "Interference is so bad I can't make contact." Hearing this, the aerologist picked up a microphone connected to an automatic wire recorder and began dictating this report:

"1240 Zebra. We are now at 24 degrees 30 minutes North and 83 degrees 30 minutes West, 20 miles northwest of Point Able. Wind is backing slowly and has increased to 65 knots from the Northeast. The surface of the sea has a mottled grayish-green appearance with the wind whipping the over-hanging crests of the waves into an almost solid sheet of flying spray. We are flying at 500 feet under and often through the lower ragged base of a stratocumulus overcast, within the outer edges of the storm. Turbulence



ROUTINE PATROL COVERAGE WATCHES THE ENTIRE CARIBBEAN

is moderate to heavy continuous. Radar reports the semi-circular pattern of the storm's outer edge on the scope.

"We intend to spiral into the storm until we reach the left rear quadrant and then head directly for the eye. We are slowly being drawn around and into the center. The winds now have backed to the North and have increased to 85 knots. We are nearing the inner portion of the storm immediately surrounding the eye on the western side. Navigator reports 15 degrees right drift. The air is thick with rain and spray, and the sky completely obscured by low rushing nimbostratus clouds. Horizontal visibility ranges from zero to 50 yards, and the wind continues to increase. It seems to drive the clouds and rain from beneath us, leaving intermittent clear patches below, through which a sea almost completely covered with wind streaks and driving spray is visible.

THE LANDING gear has been lowered and the flaps dropped 8 degrees to increase drag and allow increased power settings to offset the drop in cylinder head temperature caused by the heavy driving rain. Turbulence is now very severe, and the pilots struggle desperately to maintain control. We are now completely on instruments. Radar reports the eye of the storm bearing 33 degrees, distance 18 miles.

"1300 Zebra. We have altered heading to port and are flying directly toward the eye. Navigator reports the last drift reading as over 30 degrees right and the driftmeter secured due to extreme roughness.

"1305 Zebra. We have just broken into a clearing which appears to be the eye of the storm. The circular outline of the storm center appears distinctly on the radar scope. Low clouds have dissipated abruptly, revealing a thin dissolving layer of altostratus clouds overhead. The heavy rain has ceased and the wind has decreased sharply. The sea is confused with huge waves breaking in all directions. The photographer is busy taking pictures of clouds and sea; the radar operator is continuing to snap pictures of the radar scope patterns; the navigator is carefully checking the flight track to determine the exact location of the storm center. Pilot and co-pilot are drawing a few much-needed breaths of relief after the strain of the preceding few minutes. All hands carefully check plane and equipment for possible damage. It is now 1325 Zebra—signing off."

SOON this message came over the inter-com: "Observations complete—come right to two-five-zero and let's get the hell out of here." The big plane again entered the buffeting winds and rain, headed for home. Upon reaching the outer edge of the storm, contact with shore-based radio was established and the position of the center, intensity, and extent of the storm went crackling over the air. Relayed to the Hurricane Weather Central, the position of the storm was plotted, its movement calculated, and warnings issued.

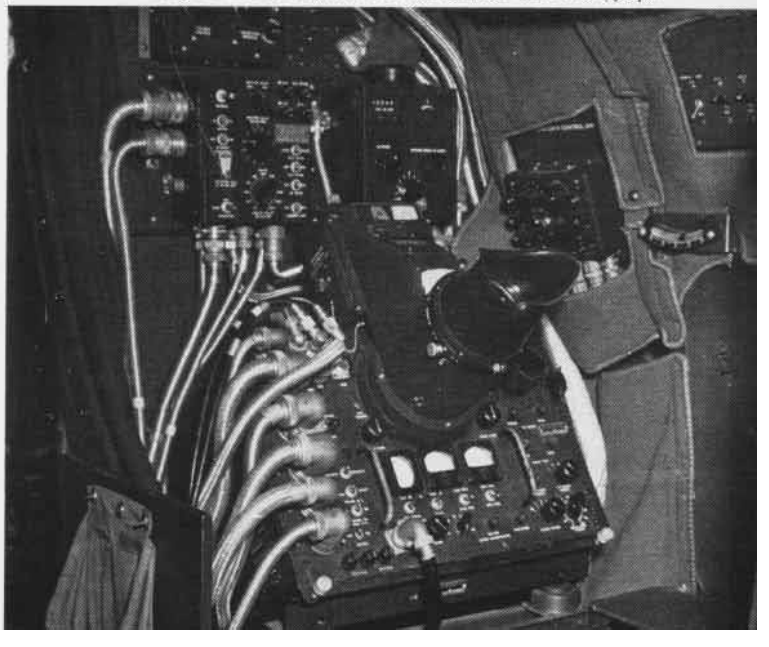
The battered plane with its weary crew soon circled the base at Miami, landed, and taxied alongside one of its sister aircraft. The crew proceeded to the ready room where the next flight was standing by to receive first-hand information concerning conditions encountered. Complete reports were made on the performance of the plane and instruments. The aerologist hurried to Weather Control to verify receipt of his radioed flight reports. This completed, the crew secured, their mission accomplished.

The station at Miami, along with all other civilian, military and naval activities within the danger zone, was busily engaged in buttoning-up all buildings and equipment. Planes and pilots in the area were readied for a fly-away.

Subsequent flights accurately tracked the hurricane as it moved northward along the west coast of Florida and inland until it dissipated over Georgia. Forewarned is forearmed.

Part of meteorological equipment on Navy hurricane patrol plane shows from left to right: wire recorder, psychrometer, barograph

Within close reach of aerologist's table are the radio altimeter, pressure altimeter, 24-hr. clock, aneroid barometer and aerograph



Radar camera here shown installed on radar equipment provides a permanent photographic record of the inside of a tropical storm

KNOW YOUR FLATTOP AND TENDED ASSIGNMENTS IN POST-WAR NAVY

FOR THE information of officers and men of the Navy's aeronautical organization, NANEWS here lists the Fleet and Reserve Fleet assignments of carriers and seaplane tenders as of 1 April, 1947. The CVL's *Wright* and *Saipan*, not listed below, are in Atlantic Fleet.

U. S. ATLANTIC FLEET

Carriers	Air Group	Home Port	Home Yard
MIDWAY* (CVB-41)	CVBG 1	.....	Norfolk
F. D. ROOSEVELT (CVB-42)	CVBG 3	Norfolk	Brooklyn
PHILIPPINE SEA* (CV-47)	CVG 9	Newport	Boston
LEYTE (CV-32)	CVG 7	Newport	Norfolk
KEARSARGE* (CV-33)	CVG 3	.....	Brooklyn
RANDOLPHx (CV-15)	CVG 17	Newport	Norfolk
CORAL SEA (CVB-43)	CVBG 5	.....	.....
PALAU* (CVE-122)	VMF 461	Norfolk	Boston
MINDORA (CVE-120)	VMF 225	.....	Norfolk
SALERNO BAY (CVE-110)	VMF 114	Norfolk	Brooklyn
SICILY (CVE-118)	CVEG 2	Norfolk	Boston
SIBONEY (CVE-12)			

SEAPLANE TENDERS

NORTON SOUND# (AV-11)
ALBEMARLE (AV-5)
GREENWICH BAY (AVP-41)
SAN CARLOS* (AVP-51)
SHELIKOF* (AVP-52)
TIMBALIER (AVP-54)
VALCOUR (AVP-55)

ATLANTIC RESERVE FLEET

Boston Group
Marcus Island (CVE-77)
Barnes (CVE-20)
Manila Bay (CVE-61)
White Plains (CVE-66)
Kadashan Bay (CVE-76)
Savo Island (CVE-78)
Kasaan Bay (CVE-69)
Nehenta Bay (CVE-74)
Hoggatt Bay (CVE-75)
Shipley Bay (CVE-85)
Petrof Bay (CVE-80)
Rudyerd Bay (CVE-81)
Saginaw Bay (CVE-82)
Sargent Bay (CVE-83)
Shamrock Bay (CVE-84)
Suwannee (CVE-27)
Chenango (CVE-28)
Santee (CVE-29)
Kula Gulf (CVE-108)

New York Group
Wasp (CV-18)
Franklin (CV-13)
Enterprise (CV-6)

Norfolk Group
Bennington (CV-20)
Lake Champlain (CV-39)
Mission Bay (CVE-59)
Anzio (CVE-57)
Corregidor (CVE-58)
Guadalcanal (CVE-60)
Natoma Bay (CVE-62)
Tripoli (CVE-64)
Gilbert Island (CVE-107)
Block Island (CVE-106)
Card (CVE-11)
Croatan (CVE-25)

Philadelphia Group
Prince William (CVE-31)
Monterey (CVL-26)
Langley (CVL-27)
Cabot (CVL-28)
Bataan (CVL-29)
Tangier (AV-8)
Pocomoke (AV-9)
Chandeleur (AV-10)
Currituck (AV-7)
Rehobeth (AVP-50)

Texas Group
Barnegat (AVP-10)
Casco (AVP-12)
Mackinac (AVP-13)
Humbolt (AVP-21)
Matagorda (AVP-22)
Absecon (AVP-23)
Chincoteague (AVP-24)
Coos Bay (AVP-25)
Rockaway (AVP-29)

*Division Task Force
#Force Flagship
xTo report to LantResFlt
§To report to PacResFlt
"Com Air Pac
'Com 12 for disposal

U. S. PACIFIC FLEET

Carriers	Air Group	Home Port	Home Yard
PRINCETON* (CV-37)	CVG 13	San Pedro	Bremerton
TARAWA (CV-40)	CVG 1	San Pedro	San Francisco
VALLEY FORGE* (CV-45)	CVG 11	.....	Philadelphia
SHANGRI-LA§ (CV-38)	CVG 5	San Pedro	Bremerton
BOXER* (CV-21)	CVG 15	Alameda	Bremerton
ANTIETAM (CV-36)	CVG 19	Alameda	Bremerton
RENDOVA* (CVE-114)	VMF 214	San Diego	Bremerton
BAIROKO (CVE-115)	VMF 452	San Diego	Bremerton
BADOENG ST." (CVE-116)	CVEG 1	San Diego	Bremerton
SAIDOR (CVE-117)	VMF 513	San Diego	Bremerton

SEAPLANE TENDERS

DUXBURY BAY (AVP-38)
SALISBURY SOUND# (AV-13)
ONSLOW (AVP-48)
ORCA (AVP-49)
PINE ISLAND (AV-12)
GARDINERS BAY (AVP-39)
FLOYDS BAY (AVP-40)
JUPITER' (AVS-8)
SUISIN (AVP-53)
CURTIS (AV-4)

PACIFIC RESERVE FLEET

Alameda Group
Belleau Wood (CVL-24)
Cowpens (CVL-25)
San Jacinto (CVL-30)
Half Moon (AVP-26)
San Pablo (AVP-30)
Unimak (AVP-31)
Yakutat (AVP-32)
Barataria (AVP-33)
Bering St. (AVP-34)
Castle Rock (AVP-35)
Cook Inlet (AVP-36)
Corson (AVP-37)

San Diego Group
Kenneth Whiting (AV-14)
Hamlin (AV-15)
St. George (AV-16)
Cumberland Sound (AV-17)

Tacoma Group
Bogue (CVE-9)
Copahee (CVE-12)
Core (CVE-13)
Nassau (CVE-16)
Altamaha (CVE-18)
Breton (CVE-23)
Fanshaw Bay (CVE-70)
Makassar Strait (CVE-91)
Windham Bay (CVE-92)
Lunga Point (CVE-94)
Hollandia (CVE-97)
Point Cruz (CVE-119)
Sitkoh Bay (CVE-86)
Steamer Bay (CVE-87)
Cape Esperance (CVE-88)
Takanis Bay (CVE-89)
Thetis Bay (CVE-90)
Kwajalein (CVE-98)
Bougainville (CVE-100)
Matanikau (CVE-101)
Munda (CVE-104)
Commencement Bay (CVE-105)
Cape Gloucester (CVE-109)
Vella Gulf (CVE-111)
Puget Sound (CVE-113)
Rabaul (CVE-121)
Tinian (CVE-123)

Bremerton Group
Essex (CV-9)
Yorktown (CV-10)
Hancock (CV-19)
Ticonderoga (CV-14)
Lexington (CV-16)
Bunker Hill (CV-17)
Bonhomme Richard (CV-31)

San Francisco Group
Intrepid (CV-11)
Hornet (CV-12)

'Bends' Hit 6 Everest Helpers

Repeated Ascent Believed Key to Woe

Attendants who worked with the men undergoing high altitude tests in *Operation Everest* at NAS PENSACOLA were affected by attacks of "bends" or aero-embolism, evaluation of the test results revealed.

They hit six of the 20 men who entered the pressure chamber several times a day to give food to the four "patients" or to take physiological tests as they carried on their experiment in ever-thinning air pressure.

The attendants wore oxygen masks into an outer lock and were raised to the level of the inner chamber pressure at a rate of 4,000 feet a minute. "Bends" usually do not occur below 30,000 feet. Since the seizures occurred at the moderate altitude of 18,000 feet and at a rate of climb not uncommon in modern military aircraft, investigators believe the repetition of ascents several times in the same day may have caused the reaction.

The Aviation Medicine school has started a test on 150 men of pilot age to find out more about possible effects of repeated fast ascents on operational flying.

NAS QUONSET POINT—At the present time, Quonset is in eighth place in volume of engines overhauled among the 12 naval air stations performing this work. The estimated workload given in the Chief of the Bureau's letter will move this station to sixth place about one year from now.

Planes Ice Up in CAVU Condition

NATS Pilots Studying Freakish Weather

VR-5, SEATTLE—The long debated question of picking up ice in clear air has been settled. Two Southbound trips over the Alaskan Gulf during this period landed at Seattle, shedding ice all over the ramp. Yet, in both cases, pilots reported CAVU conditions the entire trip.

The Commanding Officer has set up weather lectures to assist the new Plane Commanders in evaluating the freak weather that has been encountered recently. Ice fog, and terminal weather requires PPC's to be constantly on the alert, to watch the sequence reports and select the right alternate. In one recent case the weather changed from 7,000 overcast and eight miles visibility to a ragged 200 and one-eighth in less than 10 minutes.

GCA operators, in addition to their excellent assistance in low approaches are now working their gear in reverse. Contact is established before take-off in low weather, and the plane is guided safely by high obstacles during its climb. It can be brought back to the field immediately in case of emergency.

VR-5, SEATTLE—GCA almost saved an Army C-47 recently. Hopelessly lost in this area, the plane had lost most of its radio gear while holding on the range. GCA, working through Boeing field tower, located the plane and had it lined up on the runway at Sand Point.

Unfortunately, only two minutes from the field, the plane exhausted its gas supply and two of the crew bailed out successfully. The remarkable feature of this operation was that GCA instructions were relayed through two control towers on two different fields before they reached the plane. This clearly demonstrates the air-rescue possibility of GCA.

NAVIGATION QUIZ

INTERCEPTION

Depart CV at 1400 to intercept and attack an enemy cruiser.

Given:

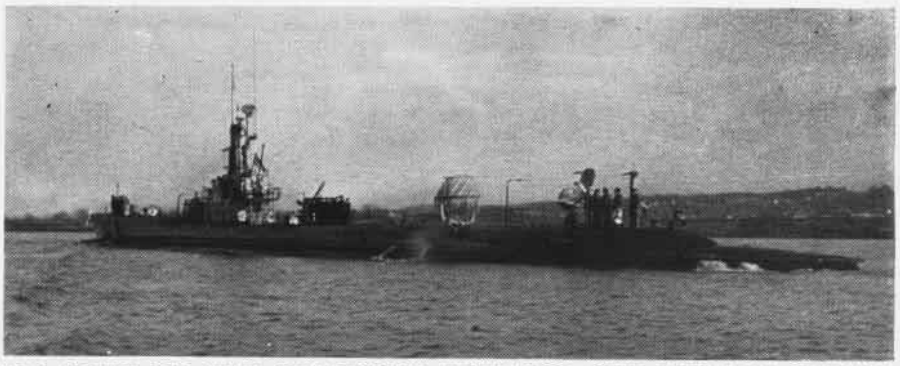
1. CV's 1400 position was Lat. 34° 15′ N, Long. 159° 11′ E, Cus. 330° T, Sp. 20K.
2. Fly at 2000 ft., Cal. A.S. 160K, Air temp. + 10°.
3. Enemy Cruiser's 1400 position, Lat. 35° 09′ N, Long. 156° 58′ E, Cus. 350° T, Sp. 16K.
4. Wind is 25K from 164° T.

Depart intercept position at 1500 and return to CV at same TAS.

Provide:

1. DRM, 2. SRM, 3. T.H., 4. TAS, 5. Cus., 6. G.S., 7. Time of interception, 8. Pos. at Interception, 9. Return Cus, 10. ETA.

(Answers on Page 40)



U.S.S. SPINAX OFF NAVAL GUN FACTORY, WASHINGTON; NOTE DECK LOAD OF RADAR

Submarine Has Experimental Radar

RIGGED OUT with as much radar gear as some flattops carried into battle, one of the Navy's newest submarines is currently undergoing tests with aviation and surface units of the Fleet. This ship, the U.S.S. *Spinax*, is one of several post-war experimental submarines engaged in testing various radar for possible future use on undersea craft.

Experiences in the last war indicated a need for submarine types designed for more highly coordinated operations between sub-surface ships and planes. The *Spinax* (SS 489) is a late Fleet type.

Operations between submarines and aircraft in the Pacific pointed out possibilities of further development of equipment along that line. Naval aviators, several hundred of whom were hauled to safety out of hostile waters by submarine crews, will always remember the life guard phase of cooperation between the air and undersea arms.

The Navy's wartime experience in both oceans provides excellent object lessons for both the aviation and submarine services. In the Pacific American submarines were a most potent combat weapon, accounting for two-thirds of Japan's merchant shipping and one-third of her war vessel losses.

In the Atlantic, operating against German undersea craft roughly identical to our own World War II fleet types, American anti-submarine tactics cleared the convoy routes between North America and Europe. The tactics and equipments used against German subs could be employed with equal effectiveness against submarines of the type we used to defeat Japan.

Fleet type submarines, like the *Spinax*, have a submerged cruising speed of about nine knots. Submerged, they can maintain this speed for about one hour and can stay below for 48 hours by slowing down to about two knots.

Submarine designers and technicians today are giving careful consideration to new designs and inventions found on captured German and Japanese undersea craft. Germany's Type 26 subs, though they existed only in blueprint form at V-E Day, will attain an estimated 25 knots underwater speed. These Type 26 boats, by using hydrogen peroxide for their Walther engines, are capable of cruising underwater at high speeds. At the end of the war Germany was using a Type 21 ship with "Schnorchel" breathing tube attachment. These submarines were capable of about 15 knots submerged.

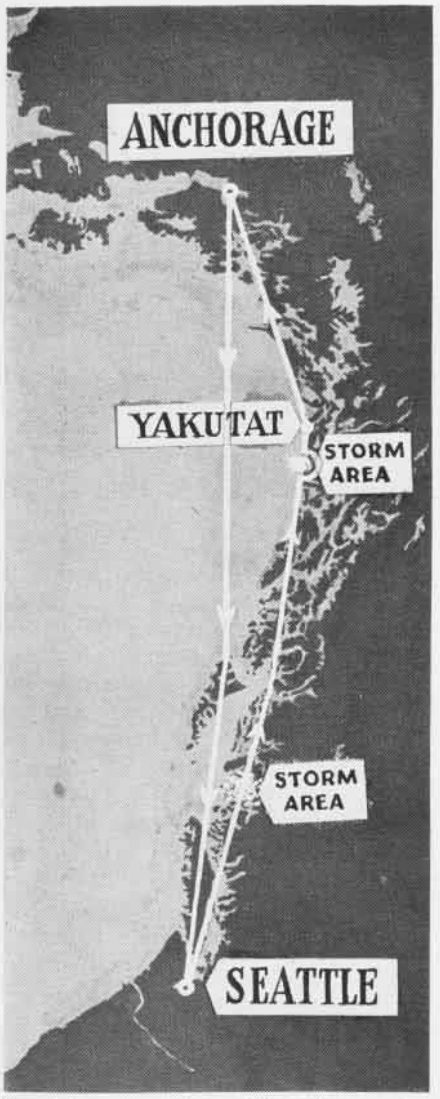
Japanese submarine designers, on the other hand, turned their inventive genius into another important phase of undersea warfare. Their newest 1-400 type subs were equipped to catapult airplanes capable of carrying one 1500 lb. bomb. The Japanese experimentation along these lines points to possible future employment of submarines for launching of guided missiles.

Fortunately allied victories in Europe and Asia cut short the German and Japanese developments in undersea warfare before they reached their ultimate objectives.

The *Spinax*, with her deckload of electronic gear, marks one step in the post-war Navy's program to keep its undersea arm abreast of developments and coordinated with the latest operation tactics of surface and air units.

SPINAX CARRIES VERTICAL SEARCH GEAR

AN AIRLINE LOOKS AT NAVY'S AIRBORNE RADAR AND LIKES IT



Ice, snow, mountains, and freezing weather make Alaskan run ideal proving ground

AIRBORNE RADAR, supplied by the Navy, is proving its peacetime commercial possibilities in service tests over the most rugged air routes in North America.

Rigged with AN/APS-10 gear borrowed from the Navy and General Electric, an American Airlines DC-4 cargo plane is now operating on regular schedule between Seattle and Anchorage, Alaska. Service reports on that plane's experience in use of radar may well point the way to wide commercial adaptations of military airborne electronic aids.

Already the radar rigged American Airlines transport has proved that radar is a valuable aid in detecting and evaluating snow and icing areas, in avoiding terrain hazards, in navigation, and in checking ground speeds.

A crew from VR-5, after riding in the radar rigged airliner on one of its Alaskan runs, turned in an enthusiastic report on the gear's safety features. At the present time an R5D is in Philadelphia being rigged with AN/APS-10 radar for tests by the Seattle based NATS squadron. Boeing technicians and Northwest Airline pilots also have observed the service test.

Airline officials, after testing AN/APS-10 gear in an experimental DC-3, modified the antenna pattern in the vertical plane by removing the spoiler that reflects some beams downward. The remaining pencil beam has a vertical and horizontal width of five degrees. Airlines' technicians reasoned that airborne radar would be infinitely more useful as a warning device if its beams omitted the two mile area below the plane. This creates a cone of silence that appears on the scope as a black circle in its center.

So long as that safety circle remains clear on the scope the pilot can be sure his plane is safe from terrain collision. A smear of light encroaching on the circle means land ahead at the plane's flight level.

A remote control unit permits pilot or co-pilot to operate the radar without having the synchronizing unit in cockpit. By mounting the radar antenna on a platform rigged to one axis of a Sperry A-12 automatic pilot system the gear is stabilized for rolls of plus or minus 25°, preventing images on the scope from disappearing when plane banks to right or left.

The complete installation on the DC-4 adds 300 lbs. to the plane's weight. As a result of continued research by technicians, a new type radar gear, AN/APS-42, has been designed for use on commercial and military planes. This gear will be lighter, sturdier and easier to operate and appears to be more adaptable for commercial usage.

The following notes taken from the log of American Airlines' radar equipped DC-4 demonstrate how a pilot can utilize radar for safety in flight:

DEPARTED BOEING FIELD, Seattle, climbed to 9000 ft., went on instruments at 5000 ft. Off eastern edge Vancouver island smaller islands, identified on radar scope by distinctive shapes, provided excellent navigational fixes. Checked ground speed by noting length of time taken for a distinctive target to travel between range marks.

On instruments at 9000 ft., an antenna tilt of −8° to −10° provided 10 mile safety circle. Noted bright target at 15 mile range 30° off port bow. Knowing mountains to be on starboard side (checked by radar and radio fixes) headed plane through echo now shown to be from six to eight miles deep.

Used antenna tilt to scan echo as it

AIRLINER PILOT CAN KEEP ONE EYE ON SCOPE: PPI LOCATED ON CO-PILOT'S SIDE TOO

approached. Echo equally large above and below, indicating that no less weather would be encountered by changing altitude. Light to moderate turbulence began as echo closed to zero range. Ice formed and covered windshield despite use of new heated type and alcohol. Outside air temperature −15° C. Encountered super-cooled moisture that formed ice when disturbed by cold skin of plane. Two engines lost rpm. Used alcohol to obtain normal power. Turbulence ended as echo receded behind main bang. No further icing occurred.

Observed large area of ice crystals on radar scope while still on instruments near Yakutat. Echo from ice crystals differs from that of supercooled water droplets in that crystals are poorer reflectors of radar signal. Echo from ice crystals and dry snow similar, although crystals give stronger echoes. Echo from ice crystals has indistinct borders presenting fuzzy appearance on scope. Ice crystal area appears to be 15 to 20 miles through and 5 to 7 miles across. Vertical scanning shows area to be larger at higher altitudes and smaller at lower altitudes. By slightly altering flight path and staying at 9000 ft., plane skirts area of crystals. Little or no rime ice formed on aircraft.

Fine snow seen on radar at maximum of 3 to 5 miles appears as an indistinct fuzzy echo. In an extensive area of fine, dry snow all that is seen is corona-like enlarging of main bang. Small areas of fine, dry, crystalline snow seen on scope as isolated targets.

Landed at Anchorage, with temperature −30° C. Between ½″ and ¾″ of ice on radome caused no noticeable deterioration of operation. Turned off equipment during three-hour stop over.

Turned on radar immediately after take-off with temperature still at −30° C. Gear started operation immediately. Thermal delay starter of Sperry A-12 took 7½ minutes to operate.

Flying direct route across Gulf of Alaska, made first landfall by radar on Queen Charlotte islands at 50 miles.

Maintained 11,000 ft. to 13,000 ft. altitude on top. By running antenna tilt down, radar scope indicated several areas of probable icing conditions. Made limited use of 2.2 microsecond weather pulse to compare with normal search pulse of .8 microseconds. Noted a very minor advantage using 2.2 pulse to observe ice crystals where echo was somewhat brighter and more distinct.

Crew members and observers aboard the cargo transport were enthusiastic over the possibilities in use of radar to fly icing conditions with greater safety.

SCOPE AND WINDSHIELD SHOW SAME PICTURE AS RIDGE AHEAD NEARS SACRED CIRCLE

NOW'S TIME FOR PILOT TO ACT; SCOPE SHOWS RIDGE ALREADY INVADING SAFETY CIRCLE

EVASIVE ACTION NEEDED! RANGE 1¼ MILES, PLANE MAY SKIM RIDGE BUT IT'S CLOSE

CIRCLE CLEARS AS PLANE SKIMS RIDGE; HILLS STILL CAN BE SEEN THROUGH WINDSHIELD

ANOTHER RIDGE LOOMS DEAD AHEAD BUT RADAR SCOPE SHOWS SAFE PASSAGEWAY THRU

RIDGE NOW WELL INSIDE TWO MILE SAFETY CIRCLE; SCOPE SAYS SAFE PASS 10° TO RIGHT

PASS THE SCOPE HAD PROMISED OPENS UP AS RIDGE LOOMS DANGEROUSLY JUST AHEAD

SAFETY CIRCLE CLEARS ON SCOPE AS RADAR EQUIPPED LINER SAFELY SKIMS THROUGH

PIASECKI HELICOPTER, PIONEERED BY NAVY, IS FIRST TANDEM MODEL TO FLY; CAN LIFT 10 PERSONS, INCLUDING CREWMEN

New Navy Helicopter Speediest in World

THE fastest helicopter in the world, the Piasecki XHRP-1, completed its initial tests and is being turned over to the Navy for Board of Inspection and Survey trials at Naval Air Test Center, Patuxent River.

The Navy pioneered the twin-rotor tandem helicopter by giving the Piasecki Helicopter Corporation a contract early in 1944 to build a helicopter capable of greater lift, cargo space and range than existing models.

There was considerable doubt in the minds of many as to whether a tandem machine could be made to fly, mainly because of interference from the forward rotor and the problem of longitudinal control.

The contract was written to provide for construction of a full-size flying model first—the idea being that the contract would be cancelled if the model did not prove successful. The full-scale flying model, the dogship, flew as early as March 1945 to test the feasibility of a tandem configuration.

The final design was not launched until the dogship had been flying for approximately one year, as it was desired to test the tandem design in actual flight before starting on experimental development. A static-dynamic model (see photo) was flown first for 500 hours of endurance testing to find out any potential modification necessary to perfect the transmission.

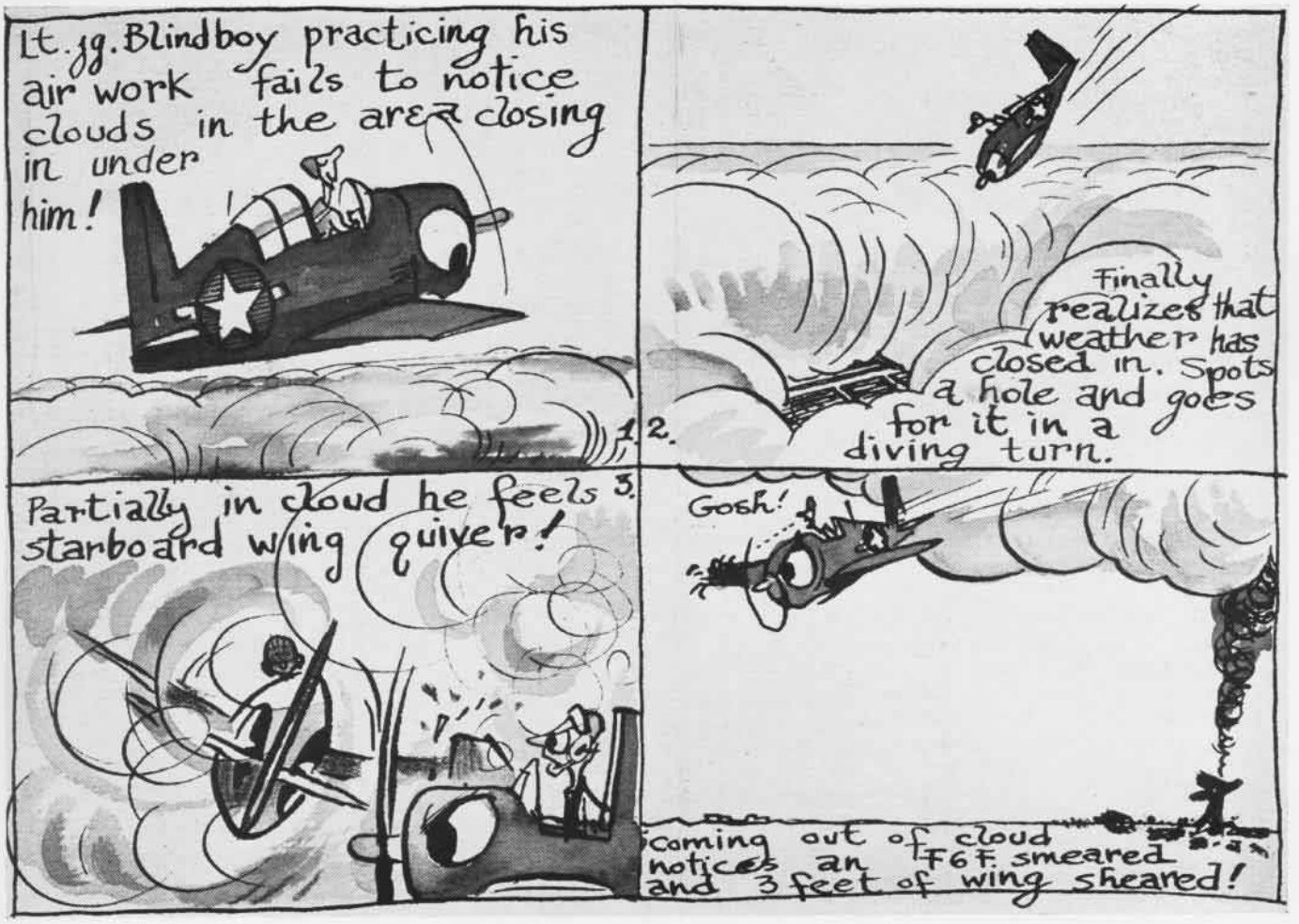
The model XHRP-1 helicopter, the first twin-rotor tandem helicopter, is powered by an R-1340-AN-1 engine. Its 600 hp. is capable of lifting 10 persons. It has a service ceiling of 16,400 feet, a range with 1,000 lbs., cargo and eight persons of 157 miles at 80 mph.

The two rotor blades on the aircraft are 41 ft. long and are not overlapping, although later designs will incorporate this feature to lessen the length of the fuselage and reduce weight. The plane is 46 feet long with rotor blades folded and 83 feet with them extended. Existing blades are of wood-metal construction although all-metal blades are under development. The prototype lifted 8,700 lbs. gross weight and has been flown at about 120 miles an hour.

Ten of the XHRP-1 type helicopters are being procured for evaluation and operational use. Potential uses for a large helicopter are troop carrying, cargo transport, search and rescue, anti-submarine warfare, air observation, ship-shore communications, personnel transfer and general utility.

Another helicopter with side-by-side twin rotor arrangement, the XHJD-1, under development by McDonnell Aircraft Corp., has two 450-hp. P&W engines driving counter-rotating blades. Although larger than the Piasecki helicopter, it too is capable of being handled on a carrier elevator. Torque from one rotor cancels the other, eliminating need for an anti-torque propeller.

STRIPPED DOWN STATIC MODEL WITH ENGINE IN CENTER HOVERS FEW FEET OFF GROUND



LT. (JG) BLINDBOY

Moral: Don't Dive Through Holes in Low Overcast

FLIGHT SAFETY

DURING the past year there have been a distressing number of fatal accidents resulting from attempts to dive through small holes in a low overcast.

If you should find yourself caught above a low overcast, under no conditions should you attempt to dive through small holes. These holes are very likely to close up before you have broken through and you will suddenly find yourself in a high speed dive on instruments, a perfect set-up for a suicide spiral. It is very difficult for even the most experienced instrument pilots to go inadvertently from contact to instruments without encountering disorientation and vertigo. This holds particularly true when a plane is at a high diving speed. Even if you are fortunate enough to come through the hole, and you are able to orient yourself, the high speed at which you will be traveling will prohibit any chance of avoiding whatever hazardous terrain lies below. Then too, there is danger in the completion of this type of descent in that excessive G's are usually encountered on the pullout. This may result in the plane's reaching such dangerous limits that disintegration will occur.

To avoid all these extra hazards that will confront you when you get caught above a low overcast remember that no let-downs should be made unless the hole is big enough so that you can make a normal spiral descent at moderate speed. Also, no let-downs should be made without a thorough knowledge of the terrain below and the minimum altitude to which you can safely descend before leveling off. If the hole is not big enough or if you don't know the terrain underneath, you should fly to another area. If you are lost and faced with a forced let-down over terrain you do not definitely know, you should bail out. Beware of the hazards mentioned above and you will never become a Case History.

CASE I—The pilot of an F6F was engaged in familiarization airwork. He climbed to 12,000 feet altitude in an effort to avoid a cloud layer and continue his airwork. After practicing for one hour, the pilot commenced a let-down in form of S turns through the haze. At this time he spotted a small hole in the cloud layer below and started a steep diving turn to port. As he flew through the small opening he felt a slight quiver and he thought that the engine had stopped and then caught again. When he came through the clouds the starboard wing began to drop and he observed that the outboard three feet of it had been sheared off for some unkown reason.

Throughout this maneuver the pilot was looking to the left and toward the ground. He stated that he did not see the object which contacted his wing nor did he see any other aircraft in this immediate area before or after the accident. HOWEVER, another F6F crashed in this vicinity at this time and the pilot of this plane was killed.

ON 16 FEBRUARY, 1947, the Naval Air Reserve Training Units throughout the country opened their doors to welcome the public aboard on "Operations Reunion" day. A sort of little Navy Day, *Operations Reunion* was dedicated to former naval personnel, and special invitations were sent to all known former Navy men.

The open-house served a dual purpose. It brought up to date many wartime friendships, provided entertainment to a deserving group of people; and in addition, served as an opportunity to present the work and accomplishments of the peacetime Naval Reserve to the public.

"Welcome back aboard" was the keynote, with static exhibits, continuous lectures, audience participation displays and free refreshments making it a most successful affair.

Only good results can be obtained from a celebration of this kind, and it is hoped this "Operations Reunion 1947" was but the first of an annual series.

● NAS FLOYD BENNETT—A page from the log of a Public Information Officer: GCA demonstration held. Attended by approximately fifty reporters. Distributed prepared GCA releases and photographs. Planes in demonstration flown by Reserve pilots. Headsets provided for ten passengers on each of four flights. Passengers thus able to hear all conversation between GCA unit and pilot. GCA unit itself shown to visitors. Laid groundwork for several future stories on Naval Air Reserve to appear in papers and magazines. Extended invitation to all newsmen, etc., to attend buffet lunch on station. Invitations accepted by all. During lunch Naval Air Reserve program was explained more fully.

Accompanied by Miss Wessels, *Journal-American* reporter and a photographer, to various places aboard the station while making picture story of WAVE and Naval Air Reserve. Suggested captions for pictures taken and gave Air Reserve background information to reporter.

Arranged to get copies of radio scripts of newscasts at 1800 and 2300 covering GCA demonstration. All stations reported the demonstration. (And to bed.)

● NAS LOS ALAMITOS—Selective training is rapidly flying itself out of business, having completed 33 and eliminated four aviation cadets for the month, leaving a total of only 24 students still unassigned. Weather permitting, it is expected that all remaining students will be assigned within the next 30 days.

An interview telling of *Operations Reunion* was arranged for National hookup over NBC on the Raleigh Cigarette "People Are Funny" program Friday evening, 14 February.

● NAS OLATHE—All stationkeepers have been organized into three-man teams, each three teams being headed by one chief. A drive to make each man a salesman for enlistments in V-6, Naval Reserve, is on and will continue for three months. Suitable prizes and inducements are being made to encourage these teams and aid them in recruiting. A recruiting bus has been outfitted and will work the area within a 50-mile radius of this station. Our itinerary for the bus is made up three weeks in advance so that newspaper coverage, want ads, and advance publicity can be handled prior to the bus' arrival in the town. The bus is equipped with typewriter desks, amplifier and turntable for playing records.

● NAS NEW ORLEANS—Closing of the last office of the Separation Center marked the end of an era. Radar test equipment and electronics ground training layouts have been installed where once the conversion from "salt" to "civilian" took place.

Six committees of officers and leading petty officers were formed to coordinate the program for *Operations Reunion* on 16 February. On 25 January, the Commanding Officer publicly offered space for meetings and opportunities for training and recreation to the first Air Scout Squadron now being formed in New Orleans.

● NAS MINNEAPOLIS—A base radio has been activated by the VR Squadron. This station maintains radio contact with the R4D's on their scheduled trips to outlying towns on weekends and with the patrol squadrons on the cross-country hops. This station is manned by organized reserves and has been successfully used to stimulate interest among ex-radiomen. The "dit-da" men eat it up. At the present time VR squadrons are transporting approximately 25 organized reserves each weekend. A definite schedule has been set up on Saturday and Sunday and men are brought in for drill periods by these squadrons.

● NAS OTTUMWA—There were 371 midshipmen and two hundred sixty-three cadets aboard as of 31 January 1947. Two hundred thirty-three aviation cadets reported aboard during the month of January. Nineteen refresher cadets left for Corpus Christi, Texas, for their flight training. Seventy-three cadets dropped from the program.

● NAS MEMPHIS—Enlisted Training instruction is being carried on at three levels: basic, intermediate, and advanced. All personnel have been screened by training. As soon as a man completes the training at this level, he is advanced to the next higher level. This will permit advancements in rate of qualified personnel as soon as the Reserve rating schedule is promulgated.

Five-digit accounting was introduced on 1 January to provide unit cost records for maintenance and operation. (We assume this five-digit system is slightly different from the basic method we learned in the first grade—and still use, sometimes up to ten.)

The Marine Air detachment squadron is well on its way to becoming a self-sufficient unit. It is now up to strength in enlisted personnel as a result of men in the 17- to 18½-year-old bracket without previous military experience, having become eligible in the program. Fifty-three men in this category were recruited.

● NAS SAN DIEGO—VR-54 is very successfully operating as a near facsimile of a regular NATS squadron. Although no definite guide to a syllabus has been received, the syllabus this unit has devised conforms with a regular NATS syllabus for Plane Commanders. Scheduled trips to Tucson and Phoenix are flown each month, and on other drill days, radio cross-country flights, GCA let downs, and standard instrument procedures are practiced. Lt. Comdr. Germeraad is commanding the unit and was formerly attached to VR-11 and VR-3. He is now regularly employed as a test pilot with Consolidated Aircraft Corp. at San Diego.

● NAS ST. LOUIS—Loomis Advertising Company gave 150 car card spaces to the Naval Air Station for one week to publicize *Operations Reunion*. The printing is being done at reduced cost and the money for the printing is being given by the St. Louis Navy League.

This station has procured, from Army surplus, 90,000 square feet of Marston matting. This material, when installed, will

provide the much-needed additional plane parking area.

A progressive refresher course for the enlisted and ground officer personnel has been set up for the Organized Reserve. This refresher includes a few hours in each shop and lectures covering the revisions in the reports and various publications to bring them up to date on these subjects.

● NAS DALLAS—Three thousand invitations were mailed out to all aviation personnel on inactive duty or former aviation rates who live in this area to participate freely in a five-day Open House celebration of recreation and amusement, which was held in conjunction with *Operations Reunion*. These 3,000 names were obtained for our mailing list from draft board files in all the surrounding communities.

Rear Admiral E. C. Ewen, Chief of Naval Air Reserve Training, and his staff were aboard January 28 and 29, for an inspection.

● NAS ATLANTA—Five officers have requested their annual two weeks active duty, commencing 4 February. Negotiations are being made with Parris Island Air Station for facilities for gunnery training for these officers. A site has been obtained for a bombing target, and miniature dive bombing runs will be conducted.

Visits by the recruiting teams from this station have resulted in doubling the number of personnel in the 0-2 program. Schools and colleges in this area have been visited, and considerable interest in the program has been shown by the GI students.

● NAS ANACOSTIA—During the month of January with the increasing number of enlistments in the Organized Reserve squadrons the scheduled classes and line maintenance instruction has risen above the previous high forecast. The course of study which was forwarded by CNAResTra, is being utilized in the training of the junior rates and has proven very helpful in the indoctrination of the so-called "teen agers" to the Naval Air Program.

● NAS JACKSONVILLE—Florida, for many years, has been besieged with forest fires. This year, as in the past, the fires have started to break out. The Forestry Service

VERY ATTRACTIVE PAIR OF 'BOMBARDIERS'

MISS NAVAL AVIATION, NAS LOS ALAMITOS

appealed to Commanding Officer of NARTU, JACKSONVILLE, for assistance in spotting these damaging fires, with the idea in mind that if an outbreak was observed and reported, the task of extinguishing the fire would be less difficult. Captain Priestman agreed to assist, providing these observations could be incorporated with routine training flights and considered in an emergency category. As a result of the first observation, NARTU broke into front page publicity in the *Jacksonville Journal*, with pictures. The Reserves not only spotted a fresh outbreak of fires, but directed the Forest Rangers on the ground by radio to the exact location, where they apprehended two men in the act of starting fires. The coordination was perfect.

● NAS MIAMI—The Greater Miami All-American Air Maneuvers were conducted at Navy Master Field on 10-12 January, adjoining this activity. Navy and Marine Air Reserve pilots participated in the show with a 24-plane formation and a simulated bombing and strafing attack on the field. Captain Al Jensen of the Marine Air Detachment put on a one-man show in an FG-1 which really brought cheers from the throngs of spectators. Many inquiries were received concerning the Reserve program at an information booth which was manned during the entire show. In spite of the elaborate display of Army B-29's, P-80's, etc., the Navy did very well.

Enlisted training received a full showing at Operation Re-union, with appropriate signs and "push-button" arrangements.

● NAS SQUANTUM—As of 31 January the station had 431 of its 447 allowed station-keepers aboard. All seaman billets are filled. Progress is being made rapidly in the recruiting drive for 0-2's. Sixty 0-2's were signed in January, and the complement is steadily increasing as the drive gains impetus.

The station accident record is still unmarred, and efforts to maintain the record are being made by Operations and Reserve Training in the briefing of pilots and by Aircraft Maintenance through close supervision in the checking of planes.

● NAS COLUMBUS—Invitations to a three-day cruise aboard the U.S.S. *Saipan* at Pensacola went out during the month to citizens prominent in newspaper, radio, education and business in the Columbus area. Responses to the invitation were prompt and enthusiastic, and as the month ended 16 guests were waiting to take off on 3 February in ComMART's staff R4D, lent for the occasion.

● NAS GROSSE ILE—On 25 January the recently formed Air Scouts held their first meeting on this station. The Air Scouts, a group of older boys in the scout group, will meet every Saturday on this station and will be given lectures and phases of different ground and technical training using the facilities of the station.

● NAS SEATTLE—In order to facilitate more efficient clearance of aircraft the NARTU SEATTLE clearance office has adopted a tag system on the flight operations board. A metal tag with each bureau number, station number and plane type is mounted on the board according to plane type. A space before the aircraft number is provided for the pilot's name. After the bureau number a plane status column is subdivided into three sections. One each for grounded, up, and flying. A teletalk system has been set up between the clearance office and the line and engineering, so any change in aircraft status is immediately noted on the board. The status tags are red on one side and yellow on the other. When the line advises the clearance office that the plane has been yellow-sheeted, the tag for that plane is turned with the yellow side out. After the plane status column comes the nature of flight and the estimated time of departure and arrival columns. The board is easily read from any part of the office and anyone can tell the status of all our planes at a glance.

NAS NEW YORK—A father and his son both were sworn in recently in the Naval Air Reserve program. Charles A. Doyles, Sr., 47, a veteran of both wars, was assigned to full-time active duty as a Shipfitter Third Class. Charles A. Doyles, Jr., 17, was sworn in as an apprentice seaman and assigned to CASU-708.—*Skyscrapers.*

MCAS EL TORO—Want a strange hobby? Try collecting bees, like M/Sgt. Russell D. May of MAG-33's police force. He has seven hives of bees, collected mostly from the rocket range, and plans to have 50 colonies soon.—*Flight Jacket.*

FREE PLANE RIDES GIVEN DURING REUNION

AND THERE I WAS...

Another Atomic Crisis

THE WORLD'S fourth atomic bomb had exploded over Bikini just ten hours before. Observer and laboratory ships, that had slipped back inside the lagoon late in the afternoon, now lay restlessly at anchor safely to one side of the radio active target fleet.

Though scientists had assured all hands their anchorage was safe an air of tension hung over the ship. The Able day bomb hadn't caused 100-foot tidal waves or 1000-mile-an-hour winds, it was true, but there still were those alpha, beta and gamma rays to worry about.

Tropical darkness, with usual suddenness, had fallen over the fleet. The decks were quiet except for muffled voices of the watch.

Then a lookout spotted a pale, eerie light shining up from beneath the water close alongside the hull. Breathless, he rushed to the Officer of the Deck. The O.D. investigated, took one look, decided an atomic crisis was too important for a junior officer and summoned the exec. The executive officer looked twice and called the captain.

A conference ensued, but the light continued to shine balefully up at them from beneath the dark water, bobbing with the swells. The captain drafted a hurried visual for instructions and stood by to wait developments and instructions. Development came first and fast.

A seaman rushed up, saluted, and reported: "Light in water off starboard bow, sir."

This was too much for a man of action. "Lower Number One whaleboat and investigate," barked the captain.

Minutes later the whaleboat crew climbed back aboard carrying the two waterproof flashlights they had fished out of the water, floating battery ends down.

They Also Served . . .

War had its exasperating experiences, whether you were on the front lines or getting shiny pants back home. Like the NANEWS officer-writer and his enlisted photographer who went to a large air station to do a picture story during the war.

The first headache came as soon as the photographer put foot on the station. The Lt. (jg) duty officer put him on the 3 a.m. "fire watch" in the enlisted barracks. It did no good to protest heatedly that he was sent down to do a job that would keep him rushing all day and he needed some sleep.

To make matters worse, the photographer was assigned to a barracks but nobody would give him a mattress or bedding because he was only on temporary duty. He slept under his pea coat on bare springs the first night. They didn't neglect to make him stand his fire watch, however.

The next "tragedy" came when the shore patrol arrested the photographer for carrying a camera around the station without an official station permit. It was on Sunday. He was tossed in the brig and his camera confiscated. It took all day and a lot of tempers were irritated before he was released.

When the writer and photographer were almost finished with their work, the crowning exasperation fell. They finally had gotten the use of a station truck to transport their heavy photo gear to the operations shack and fly home on NATS. They parked the truck on a sandy strip near operations and carried their gear in to check it. When they got back the station patrol had given them a traffic ticket for parking on the "grass".

That did it. They left the truck sitting there, not bothering to return it to the place it was borrowed from, got on the plane and went home. So far as they know, the station's truck still is sitting on the "grass" and the traffic fine is unpaid.

Man of Action

FOR ANYONE with less than three wide stripes on his sleeve, small boats at Bikini were harder to draw than four of a kind in poker. But our O.D. that particular afternoon was an optimistic cuss, so he just said "check back in a couple of hours."

The seaman first he was talking to had passed up an afternoon of beer drinking ashore to visit an old boot camp buddy aboard our jeep carrier. Obviously a serious lad, he'd stopped at the quarterdeck to inquire about transportation back to his ship, the LST anchored just off our port bow.

"You see, sir," he explained, "I have a watch coming up at eighteen hundred."

As the afternoon waned the sailor stopped at the quarterdeck from time to time to inquire about transportation. The answer continued to be "no boat available just now."

"Just now" became later and later. At 1700 the lad made a final appeal.

"Sorry, no boat available," was the reply.

Without a word the boy saluted, strode across the hangar deck, ran down the port gangway, dived off and started swimming toward his ship half a mile away.

Aboard the flattop a boat became available, but quick.

"Pull that man out of the water and get him to his ship before 1800," sang out a voice from the quarterdeck as the whaleboat pulled away from the boom.

"And may it never be said that a guest on our ship had to swim all the way home," muttered the O.D. as he watched his boat crew haul a dripping but still very determined sailor out of the lagoon.

Use Your Own Judgment

The jeep carrier plowed through gray, pitching Pacific seas. Up on the bridge a quartermaster was struggling to keep the ship on station.

The admiral's insistence on station keeping was legendary, so the Officer of the Deck cautioned the quartermaster a second time. But obviously advice wasn't improving conditions, so a few minutes later the O.D. took the wheel.

A little later when the captain came out on the bridge for a quick con, the flattop was still off station. "Get this ship back in position, Mr. S——" (that was the O.D.'s name), ordered the skipper.

The captain paced nervously up and down the bridge casting frequent and apprehensive glances toward the flagship. Minutes later the ship was still out of position in the task unit.

"Give me that wheel," growled the skipper. And with the O.D. and quartermaster looking on, he set about getting his ship back on station. A quarter of an hour later it was apparent even to the Old Man's eye that conditions hadn't improved.

You could almost see the fire in the

admiral's eyes as the dreaded visual blinked across from the flagship. No one on the bridge needed the signalman's text. Transcribed and moderated it read: "Why aren't you on station?"

The quartermaster was back at the wheel performing his usual seamanlike job when the O.D. inquired: "How shall I answer, sir?"

"Use your own judgment Mr. S———," grunted the captain, "keeping in mind that the admiral writes my fitness report and that I write yours."

Helicopter Saves Ditched Pilots

Helldiver Crew Rescued in Eight Minutes

Plane guard destroyers, which have set high records for picking up downed pilots, are in for some competition. A Sikorsky helicopter, based aboard the U.S.S. *Franklin D. Roosevelt* during the recent flight exercises, rescued six naval airmen within a period of 10 days.

The s-51 helicopter, operating aboard the carrier on a demonstration and evaluation test, picked up pilots who made emergency water landings during operations southeast of Bermuda.

Most spectacular was the rescue of Lt. Comdr. G. R. Stablein who was in the water and unable to inflate his life jacket. Just as he was sinking, the helicopter pilot, D. D. Viner of Sikorsky, lowered a hoist cable directly into the downed pilot's hands.

On its first rescue, the rotary-winged craft set what probably is a record for returning downed aviators to home base. When a *Helldiver* went in shortly after take-off from the U.S.S. *Leyte*, the helicopter had the pilot and crewman back aboard the carrier exactly eight minutes after their landing.

Hovering approximately 10 ft. above heavy swells, the helicopter used the hydraulic hoist to pick up the crewman and returned him to the *Leyte*. Then he returned for the pilot.

A few days later the craft saved a *Helldiver* crew who ditched shortly after take-off and a *Corsair* pilot who ditched while in the landing circle. When a destroyer succeeded in finding and picking up the crew of a *Helldiver* which ditched 30 miles from the task unit, the helicopter transferred them back to their carrier.

S-51 WAS ON STATION DURING OPERATIONS

TECHNICIAN LOADS EQUIPMENT INTO B-29 WHICH CARRIES PHYSICISTS IN UPPER AIR

NAVY, ARMY STUDY ATMOSPHERE

For years scientists have been sending an assortment of balloons, rockets, and other gadgets into the upper reaches of the atmosphere in an effort to unravel one of nature's most guarded secrets. Now the tables are turned and Navy scientists are sending scientists into the higher altitudes for exhaustive research.

In a flying lab B-29 provided by the Army, the scientists have a stable platform from which to study cosmic rays and many of the properties of the upper atmosphere.

Sponsored by the Office of Naval Research, the atmosphere studies will be conducted from 10,000 ft. up to 45,000 ft. In addition to the Army and Navy, collaborators in the experiments are the Universities of Chicago, Colorado, Harvard, Yale, Johns Hopkins, California and the Massachusetts, Carnegie and California Institutes of Technology.

The huge plane, which has been investigating the cosmic ray and its relation to atom smashing, recently was flown from NOTS Inyokern, Calif., to Andrews Field, near Washington, D.C. It is now being fitted out by Navy and civilian scientists for further experiments.

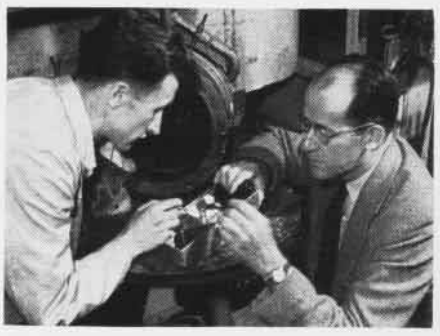
Purpose of the new tests will be to measure sky brightness at various levels, investigate the composition of the atmosphere and determine what stars are visible in the daytime. The latter experiment may provide new data for navigators of long-range aircraft.

Many of the instruments used in the flights have been perfected by the Naval Research Laboratory. Officials of NRL say that fundamental data gathered will have application in almost all optical devices, especially in the design of sextants for air navigation.

Special "cloud chambers" located in the bomb bays photograph the paths of the cosmic rays as the flying lab roams the higher altitudes. Thus far man-made equipment has not been able to produce these rays, only observe them.

Besides these studies, the Navy's upper atmosphere research program includes spectroscopic measurements, infrared measurements, studies in photometry and sky brightness, meteorology coronagraphic recordings, terrestrial magnetism and electricity and atmospheric composition measurements.

The U.S. Weather Bureau will install special equipment in the plane to acquire data to aid in future forecasting. Data used at present were compiled by a scientist from Smithsonian Institution more than 25 years ago.



SCIENTISTS PREPARE COSMIC RAY CAMERA

Booklet Analyzes Navy Air War

Relation of Air and Sea Power Studied

U. S. Naval Aviation in the Pacific; A Critical Review has been issued by the Office of the Chief of Naval Operations. This 56-page booklet was prepared as an analysis of the relation between air and sea power. It is based upon the experience of naval aviation in the war against Japan as recorded in files of the Navy Department and upon reports of the United States Strategic Bombing Survey.

As the preface by Vice Admiral Forrest Sherman, DCNO, points out: "The danger inherent in any report confined to one aspect of the war is that it may mislead the reader into forgetting that the conflict was won by a combination of ground, naval, and air forces, each of which carried its share of the common burden. All operated within the framework of strategic plans, and it is the aim of this analysis to show how naval aviation fulfilled its part of those plans."

A limited number of copies of the study have been distributed to major aviation commands and to training activities to aid in evaluating the scope and character of naval aviation. Additional copies may be obtained through the Government Printing Office.

CNO Issues New Safety Bulletin

Hellcat Wanderings Feature of First

A new flight safety bulletin called *The WRECKord* is being published by Chief of Naval Operations for distribution to aviation activities, bringing them the latest word on recent aircraft accidents.

The bulletins are published in three colors and are for use in ready rooms, on all carriers, squadrons, naval air stations, reserve training units and Marine Corps air activities.

The first issue of *The WRECKord* features the tale of six *Hellcat* pilots who wandered around the Atlantic seaboard looking for a place to land—an episode that wrecked five of the planes because nobody bothered to keep track of where they were.

WANDERING F6F'S FEATURE NEW POSTER

As an aid to personnel wishing to keep up with current writing in the aviation field, NANews is herewith launching a check list of some of the books and magazine articles considered most likely to be of interest.

BOOKS

The Navy's Air War; A Mission Completed. U. S. Navy, Aviation History Unit, DCNO (Air). Harper, 1946.

U. S. Naval Aviation in the Pacific; A Critical Review. U. S. Navy, CNO. Government Printing Office, 1947.

History of U. S. Naval Operations, World War II; Vol. II, *Operations in North African Waters, 1942 to June 1943.* Samuel Eliot Morison. Little, Brown, 1947.

Flight Testing: Conventional and Jet-Propelled Airplanes. Benson Hamlin. Macmillan, 1946.

An Introduction to Electronics. Ralph G. Hudson. Macmillan, 1946.

Principles of Radar. Members of Staff of Radar School, M. I. T. McGraw-Hill, 1946.

Gas Turbines and Jet Propulsion for Aircraft. G. Geoffrey Smith. Aircraft Books, 1946. (A limited number of copies have been procured by Aviation Training Division, DCNO (Air) to be submitted to the Technical Training Command for evaluation and possible use.)

MAGAZINE ARTICLES

Gas Turbine Engine Performance. H. Serbin. *Aero Digest*, Vol. 53, No. 5, Nov. 1946, pp. 78-80, 122, figs.

Cabin Pressurization Units. *Aero Digest*, Vol. 53, No. 5, Nov. 1946, pp. 75-77, 167, illus. Details of the construction and operation of the AiRResearch cabin supercharger and its components.

Pilot-Airplane Integration. Lt. Comdr. M. C. Shelesnyak, H (S) USNR. *Aero Digest*, Vol. 53, No. 6, Dec. 1946, pp. 44, 45, 122, 125, 126, illus. Discussion of human physiological limitations in relation to high-speed aircraft design.

British Powerplant Progress. John W. Morrison. *Aero Digest*, Vol. 53, No. 6, Dec. 1946, pp. 78, 79, 118, 121, illus.

History of British Gas Turbines. Marcus Langley. *Aeronautics*, Vol. 15, No. 4, Nov. 1946, pp. 66-70, illus.

Into Space. Eric Burgess. *Aeronautics*, Vol. 15, No. 4, Nov. 1946, pp. 52-57, figs. Possibilities of interplanetary flight.

Air Strategy and Atomic War. Norman Macmillan. *Aeronautics*, Vol. 15, No. 4, Nov. 1946, pp. 44-51, figs.

The First Jet Flying-Boat Fighter. *The Aeroplane*, Vol. 71, No. 1850, Nov. 8, 1946, p. 531 illus. The Saunder-Roe SR/A1 (Reviewed in *U S. Naval Institute Proceedings*, Feb. 1947, pp. 245-246).

How Blows the Wind? Robert N. Buck. *Air Facts*, Vol. 9, No. 12, Dec. 1946, pp. 18-24, diagr. An explanation of pressure-pattern navigation.

Preparing for an Airline Pilot Job. Charles A. Selby. *Air Facts*, Vol. 9, No. 11, Nov. 1946, pp. 39-42.

"Dear Student . . ." IV—Your Landing Gear. Wolfgang Langewiesche. *Air Facts*, Vol. 9, No. 11, Nov. 1946, pp. 54-68, diagr. Instructions in take-off, landing, and taxiing.

Design Development of the McDonnell FD-1 Phantom. Kendell Perkins. *Aviation*, Vol. 45, No. 11, Nov. 1946, pp. 40-48, illus.

Compounding Aircraft Engines. W. O. Meeckley and L. J. Fischer. *Aviation*, Vol. 45, No. 11, Nov. 1946, pp. 50-52, illus. Development of the type of power plant in which an exhaust turbine is compounded with a reciprocating engine.

Design Development of the Douglas XB-42. Carlos C. Wood. *Aviation*, Vol. 46, No. 2, Feb. 1947, pp. 37-42, illus.

Transonic Hazards Reduced. John Stack. *Aviation*, Vol. 46, No. 2, Feb. 1947, pp. 43-45, illus. New wind tunnel data promises less difficulty for airfoils in passing through the speed range of sound.

These Test Procedures Keyed Jet Engine Advance. E. E. Stoeckly. *Aviation*, Vol. 46, No. 2, Feb. 1947, pp 46-48, illus.

Air Conditioning Turbine-Propelled Aircraft. H. J. Wood. *Aviation*, Vol. 46, No. 2, Feb. 1947, pp. 49-52, illus.

Unique Features Built Into XS-1. *Aviation News*, Vol. 6, No. 23, Dec. 2, 1946, p. 12, illus.

Navy Reveals Two New Jet Fighters. *Aviation News*, Vol. 6, No. 22, Nov 25, 1946, p 9, illus. The Chance Vought XF6R-1 and the North American XFJ-1.

Jet Materials Progress Slow; Search for Heat Resistant Alloys. *Aviation News*, Vol. 6, No. 23, Dec. 2, 1946, pp. 17, 20.

Supersonic Research Quest Poses Construction Problems. *Aviation News*, Vol. 7, No. 7, Feb. 17, 1947, pp. 13-14, illus.

High-Speed Airflow, I. H. R. Smelt. *Flight*, Vol. 50, Nos. 1973, 1974, Oct. 18, 24, 1946, pp 417-419; pp. 443-446, illus. An address reviewing the methods, equipment, and results of German research.

British Military Aircraft. *Flight*, Vol. 50, No. 1977, Nov. 14, 1946, pp. 523-531, illus. Design and performance characteristics discussed and tabulated.

Military Aircraft Tomorrow. *Flight*, Vol. 50, No. 1977, Nov. 14, 1946, pp. 518, 519, illus. Comments on possible British developments.

Short Sturgeon. *Flight*, Vol. 50, No. 1973, Oct. 17, 1946, pp. 422-426, illus.

Design, structure, performance of a new British carrier-based aircraft.

Airscrew Turbine Progress. *Flight*, Vol. 50, No. 1975, Oct. 31, 1946, pp. 466, 467, illus.

Deck Landing. James Bridge. *Flight*, Vol. 50, No. 1976, Nov. 7, 1946, pp. 494-496, illus. Details of the operation of aircraft from the flight deck of a carrier.

Air Industrial Planning in the Postwar Period. B. W. Childlaw and E. W. Rawlings. *Mechanical Engineering*, Vol. 68, No 11, Nov. 1946, pp. 971-975, illus. Highlights of report submitted in Oct. 1945 to Senate Military Affairs Committee.

Corrosion Is No Accident. H. E. Smith, Jr. *Mechanical Engineering*, Vol. 68, No. 11, Nov. 1946, pp. 943-948, illus.

Decca To the Rescue. N. F. Silsbee. *Skyways*, Vol. 6, No. 2, Feb. 1947, pp. 22, 23, 66, illus. Discussion of possibilities of Decca Track Control Unit used in conjunction with Decca Navigational Aid System in problems of automatic flight, air traffic control, and bad weather landings.

Rocket Power. Louis Bruchiss. *Skyways*, Vol. 6, No. 2, Feb. 1947, pp. 33, 78, 82, illus. Reaction Motors' rocket engine.

AAF's Seven-League Boots. *Skyways*, Vol. 6, No. 2, Feb. 1947, pp. 61, 92, illus. Reciprocating engine still very much in picture for long range operations.

British Versus American Jets. Nathaniel F. Silsbee. *Skyways*, Vol. 6, No. 3, March 1947, pp. 26, 27, 60, 62, 68, illus.

Weather by Radar. Howard T. Ennis. *Skyways*, Vol. 6, No. 3, March 1947, pp. 16, 17, 50, illus.

Trends in Aircraft Engines. Robert Insley. *Western Flying*, Vol. 26, No. 11, Nov. 1946, p. 42.

NATS OAKLAND—A new passenger terminal for VR-2 was completed at NAS ALAMEDA recently. During January this command had 20 departures and 21 arrivals and carried 587 passengers to Honolulu and 571 from there to the United States.

TECHNICALLY SPEAKING

ORDNANCEMEN PREPARE .50 CAL., 20 MM. FOR FIRING THROUGH NOVEL WATER TARGETS

INDOOR FIRING RANGE BOASTS WATER TARGET

NAS JACKSONVILLE — Modernization of the indoor proof firing range by A&R has resulted in several novel features including a new-type water target. The new range, built from a design by BUORD, is used for testing overhauled machine guns.

Proof firing from two stations in the old indoor range was a tedious job because the large sand-filled bunker used to stop the bullets needed constant replacement. Pellets pounded the sand into a hard rocky mass causing dangerous ricochets.

The modernized range features the original two horizontal firing positions equipped with water targets by placing a long, open-ended, five-inch pipe in front of each muzzle position. A five-inch gun barrel is used as the first section of each pipe.

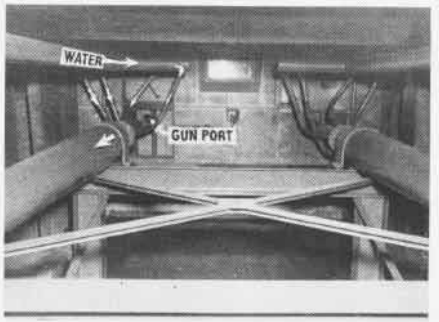
Each tube is kept full of water through jet-like supply tubes attached at an angle to the end of the pipe nearest the gun. Water is supplied at 30 lbs. pressure and 475 gals. per min. through each of these jet tubes.

As a result of the high velocity of water injection, it is exhausted only at the end of the tube extending into the old sand bunker and no water flows from the end nearest the gun. Water in the tube absorbs most of the energy from the high velocity bullets and they are discharged along with the stream into the bunker room.

Here the spent pellets clatter harmlessly against the armor plate lining the wall and fall to the deck where they are washed by the water flow into the sump pit. A screen retains the pellets in the sump, keeping them from being picked up in the recirculating pump suction. At intervals the accumulation is shoveled out and the metal salvaged.

Suitable interlocks are provided to prevent firing until hydraulic pressure has been built up in the firing tubes. The firing tube tunnel floor is covered with several inches of water, and a spray is directed across the area in front of the muzzle ports as a precaution against burning powder grains.

The interior surfaces of both of these rooms are covered with acoustical tile to reduce the firing noises. The control room is equipped with two firing positions for testing both 50 cal. and 20 mm. guns with firing being accomplished electrically.

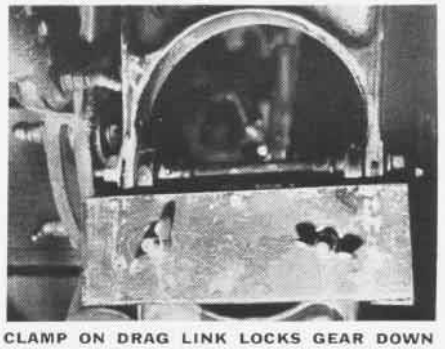


INSIDE VIEW SHOWS WATER TUBE DESIGN

NATS Squadron Checks Compass

VR-5, SEATTLE—A good ground check for automatic direction finders has been adapted by the radio lab. By terminating one end of the sense antenna to ground through a 300 ohm resistor and connecting a signal generator to the other end, it is possible to check the other compass for bearing, sensitivity and loop operation.

This procedure can be reversed and both compasses can be given a good ground check on the line. By using an ARC-1 bristol wrench and the end of the ARC-1 receiver and transmitter, repair has been greatly facilitated. The department also has adapted a tube ½" in diameter slotted at one end to fit over the locking bars on the tuning head. This prevents slipping and is handy to use.



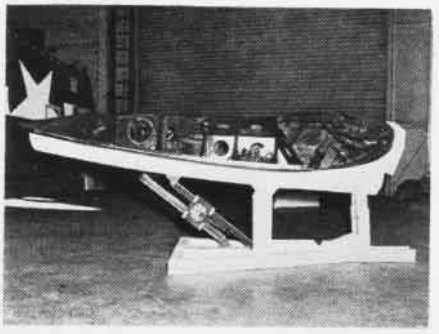
CLAMP ON DRAG LINK LOCKS GEAR DOWN

Clamp Device Prevents Accidents

NAS JACKSONVILLE—A locking device that prevents accidental retracting of landing gear and tailwheel mechanisms on F4U, FG, and F3A planes while parked on the deck will save this activity an estimated $5000 a year.

The locking device, suggested by a station employee, consists of a metal "U" clamp bolted to the gear drag link. This clamp prevents landing gear from retracting. The tailwheel mechanism is locked in a down position by means of a flat metal bar clamp bolted to the tailwheel scissors.

[DEVELOPED BY H. C. MURRAY]



WING IN CRADLE ACCESSIBLE FOR WORK

Cradle Speeds Wing Maintenance

NAS NORFOLK—An adjustable wing cradle, designed to facilitate work on wings in A&R shops and to support a wing during shipment, has been developed by two employees of the Supply Department at Norfolk.

The new cradle is adjustable to any size wing, large or small, and is simple in construction. Since the wing can be held either on its side or on end by a simple adjustment within the cradle, all parts of the wing are accessible for repair from the floor. And with the cradle mounted on rollers for easy mobility, mass production of repairs can be achieved.

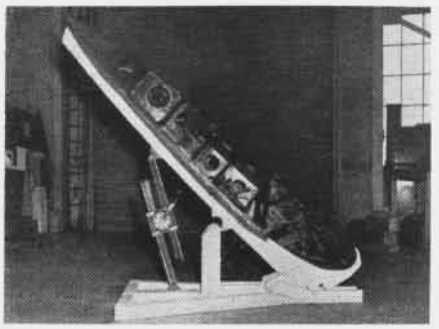
At the present time, A&R shops use scaffolding for working on wing structures. This takes up a great deal of space and is hazardous to the workers. Since the new cradle would eliminate the need for scaffolding, a saving in time, labor, and cost can be effected. It is estimated that scaffolding used in working on wings costs around $400. Cost of the cradles is estimated at $75.

The co-inventors of the cradle planned it also for use in shipment of wings between activities. At present, large structures requiring shipment in an upright position need special routing because of underpass and overhead conditions enroute. This frequently results in a much longer and more devious route for the shipment, with resultant higher cost to the government. Since the cradle can be adjusted for upright or horizontal position, maximum height or width limits enroute need not be exceeded.

This device is now in process of research for granting of patent rights. It is noted that while any use made of the new wing cradle by the U. S. government will be gratis, this does not hold for commercial adaptation.

▸ ***BuAer Comment*—This device would probably be found useful in A&R shops for placing wings in various positions most accessible for performing repair operations, but it is questionable whether it would afford adequate bracing for shipment of wings. Adequate crating and padding is essential to prevent damage to wings in handling during shipment.**

[DESIGNED BY J. K. KELLY AND J. P. SMITH]

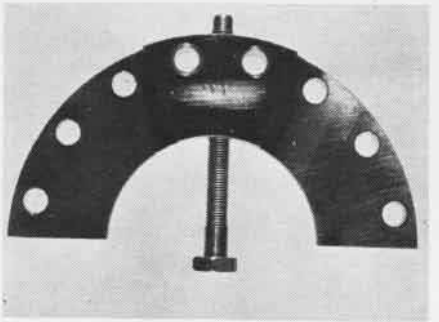


DEVICE IS USEFUL IN TILTING WING UP

Device Aids In Bolt Removal

NAS ALAMEDA—Frozen crankcase bolts on R-1830 engines can be conveniently removed through use of a tool developed at this station.

The device (*see cut*) is placed over the existing cylinder hold down bolts after nuts from power section bolts have been removed. These power section bolts are then removed by screwing the ⅝" screw bolt located in center of device against the power section bolt.



TURNING SCREW REMOVES FROZEN BOLTS

[DEVELOPED BY DONALD M. WATERS]

AOM Builds Boresight Template

NAS QUONSET POINT—A method of boresighting a torpedo training camera while the plane is in any convenient location with wings either spread or folded has been developed at this activity.

The equipment consists of a sheet metal template 8" x 12" with cross lines cut through and a 3" square of clear glass, with cross hairs in place of ground glass. The template is constructed by boresighting the torpedo in the usual manner, after boresighting camera was secured and safety wired.

The blank template and 3" glass boresighting unit were installed; center lines were inscribed on template; template was removed and cross lines were accurately cut through metal.

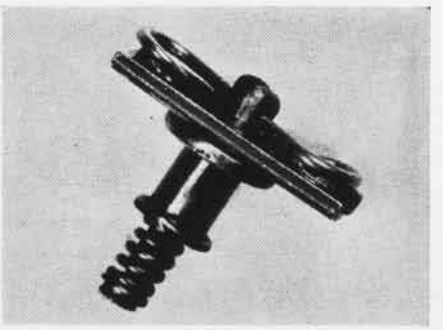
In use, the template is installed on two forward bolts of camera mount. The magazine is then removed and the 3" glass boresighting unit is properly positioned. The camera shutter is opened and three points are lined up. The operation is completed by closing the lens shutter down to a pin point and rechecking alignment.

With this method a camera can be boresighted in approximately 15 minutes as compared to two hours required under the method previously used.

[DESIGNED BY EUGENE REINBOLD, AOM1c]

Fastener Speeds Dzus Riveting

NAS MOFFETT FIELD—A fastener that combines the spiral cam of the Dzus with a spring and body similar to that of a Cleco sheet holder has been developed by a sheetmetal worker at this station. The combination fastener can be applied quickly and will hold the Dzus springs in the correct position during installation by riveting.



NEW FASTENER ALLOWS BETTER VISION

This fastener can be made with a threaded end so that various sizes of Dzus fastener cams can be attached to one size basic Cleco. The fastener saves time and allows better vision for riveting Dzus springs. The idea was submitted under the Navy Employee's Suggestion Program.

[DEVELOPED BY A. BONDESEN]

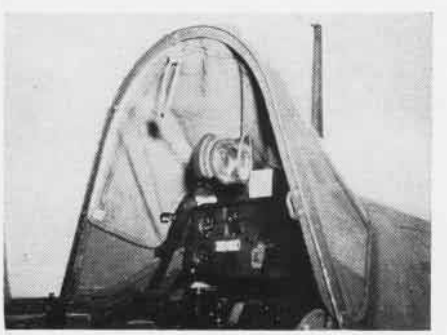
VR-6—This squadron has spot-check pilots who ride the line in an effort to improve the service and efficiency of Naval Air Transport Service. These pilots carry colored plexiglas windshield plates and dark goggles and give the plane commanders checkouts on their instrument flying skill. Besides their instrument work in JRB and R4D Link Trainers, pilots get night classes in navigation 2½ hours a night for two weeks.

Helldiver Canopy Aids Training

VA-11-A, PACIFIC—To assist in developing its instrument training program, this squadron developed a greatly improved flying hood for installation in the SB2C.

The new device consists of a small canvas blind that covers the windshield area and is held in place by two zippers. The sliding canopy is painted with purple calcimine on the inside, giving a translucent effect and admitting adequate light for easy reading of instruments.

With the canopy closed and the windshield blind zipped up, the pilot is unable to see outside the cockpit. The canopy can be cleaned or repainted in a few minutes. Any time the pilot wants to make visual contact with the ground or horizon, he can open the canopy or unzip the blind. A safe landing can be made with the blind down and the canopy closed or with the canopy open and the blind up. Incorporation of the hood in SB2C aircraft has been authorized by BUAER.



WINDSHIELD CANOPY IS EASILY ZIPPED

Air Depressor Speeds Valve Job

NAS Norfolk—An air operated valve spring depressor, developed at this station, saves time and improves safety conditions. The air operated depressor has proved to have many advantages over the hand operated depressor previously used here.

The new tool consists of a hinged depressor actuated by a small air cylinder controlled by a foot pedal air valve. Held in the cylinder by a pointed anchoring bolt, the tool is capable of exerting considerable force to compress valve spring for removal of the locks.

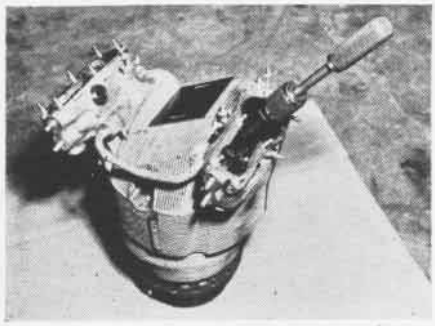
On release the tool does not snap back but retracts smoothly minimizing the danger of injury from flying spring locks or other parts.

[Developed by Carl W. Poston]

Carbon Removal Is Made Easier

MCAS Cherry Point—An employee of this station has designed a tool that removes carbon from the outside diameter of exhaust valves on aircraft engines thereby expediting removal of spring seats.

The device is a cylinder 1¾" in diameter with a 1¼" bore. Two slots at points opposite each other provide for abrading and removing carbon from exhaust valve.



HANDLE REVOLVES DEVICE OVER GUIDE

A handle attached to threaded end of cylinder provides a means for revolving the device over valve guide.

In the old method where a piece of pipe was hammered down over valve guide to remove carbon, work was cumbersome and the pipe was difficult to remove.

[Designed by Ira N. Parson]

China Dust Hard on Hydraulics

VMF-115, China—Operations in North China under extremely dusty conditions have brought about a considerable amount of hydraulic trouble for this squadron's F4U-4's. Actuating struts exposed to the dust frequently develop leaks and must be replaced by reconditioned actuating struts.

To meet this situation, the one trained hydraulic man in the squadron built a small portable hydraulic test stand that is capable of testing any hydraulic part in the plane. The stand can be assembled or disassembled in less than an hour. It fits into a packing case about 30"x16"x20" and was made from salvaged parts.

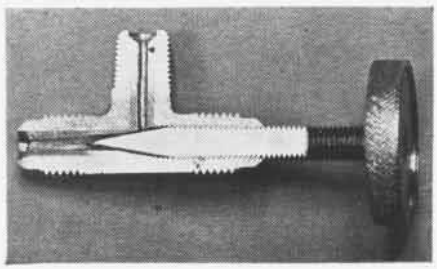
Besides a hand pump, this stand has an electrically-driven hydraulic pump which maintains normal flight hydraulic pressure while a unit is being tested. It also is equipped with a scavenger system that returns the hydraulic fluid to the reservoir through strainers.

By using this stand a small stock of reconditioned actuating struts may be kept on hand that have been tested under flight conditions and are ready to be put on planes when needed.

Low Cost Needle Valve Does Job

NAS Moffett Field—A low cost sensitive needle valve for the regulation or control of air pressure in instrument test equipment saves this activity approximately $400 a year. The device, developed under the Navy Employees' Suggestion Program, is made by modifying a standard AN825-4 or 4B Tee.

One arm is drilled and tapped for a ¼"x28x1¼" bolt with a 20° taper out on



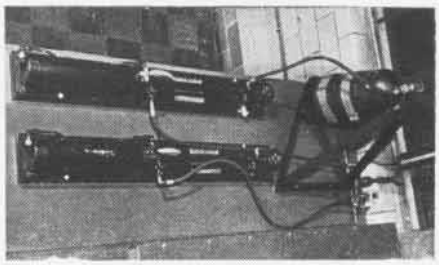
SOLDER SERVES AS VALVE SEAT IN TEE

one end and a 1" knurled knob attached to the other. After placing the stem in desired location the other two arms of the Tee are filled with solder. The stem is withdrawn and a #30 drill used to drill through the solder, which acts as a seat for the stem.

[Developed by H. C. Hackley]

Grosse Ile Fills Air Bottles

NAS Grosse Ile—To eliminate necessity of relying on outside facilities, a pump has been developed by the aircraft maintenance department for filling



BOOSTER PUMPS FILL BOTTLES QUICKLY

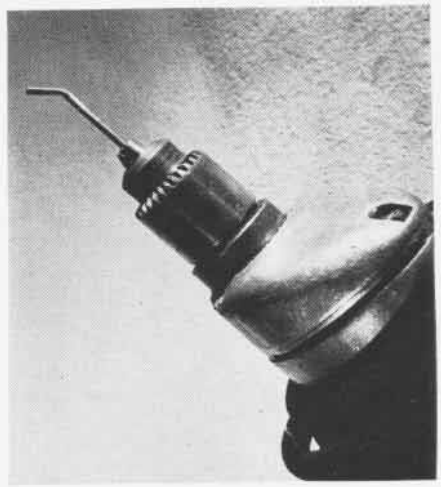
compressed air bottles used on tires, oleo struts, and F6F dump bottle.

Two ordinary booster pumps arranged in parallel, one being a spare in case of breakdown, are capable of filling the compressed air bottles in 25 minutes and the F6F dump bottles in about 20 minutes. The bottles are strapped to the frame with obsolete safety belts. It is estimated the device saves the station $50 a month.

Drill Speeds Up Countersinking

NAMC Philadelphia—To speed up burring and countersinking of inside surfaces, particularly in inaccessible places, this activity uses a modified hooked burring tool in conjunction with a drilling machine.

The idea was developed by a civilian



HOOKED BURRING TOOL DOES THE JOB

employee of this activity under the Navy Employees' Suggestion Program. The tool is simple in design and easy to manufacture. It may be used in any portable electric drill. The tool may be easily inserted in a hole and withdrawn without the necessity of dismantling or removing it.

In countersinking operations, preparatory to rivet installation, a different size tool shank is required for each different size rivet. It is estimated that use of this tool at NAMC has resulted in a saving of two man-hours per plane.

[Designed by John J. McCartney]

File Holds Tube Bending Data

NAS Alameda—A reference card file system, developed at this activity, makes it possible to maintain a complete record of each tube bending operation. Under the method formerly in use here templates for all tube bending purposes were stored.

Now when a tube bending job comes up, a data card is pulled from the file and the operation proceeds according to instructions appearing on card. A coding system for plane, tube and template has been devised for use with this filing system.

In addition to saving thousands of dollars per year in manhours and material, the filing system frees 500 sq. ft. of floor space previously required for storage of templates. Complete plans can be secured from this station.

[Designed by M. R. Paslay and R. J. Simmons]

DATA CARD AVAILABLE FOR EVERY JOB

SERVICE Test
INTERIM REPORT DIGEST

This digest covers the 15 January and 15 February Interim Reports of Service Test, NATC Patuxent, and does not necessarily reflect BuAer policy.

F8F-1 (206 Hours' Test)

Hydraulic System. Project delayed by hydraulic difficulties. (See Feb. Digest) Grumman fix, mounting unloader valve horizontally on distribution panel to firewall, has apparently eliminated hydraulic line breakage and unloader valve squeal. Unloader valve, P/N 27574, failed after 97 hours, its life probably shortened by previous trouble. Disassembly showed that unloader valve seat, P/N 27567, was worn, causing the system pressure to drop and unloader valve to cycle every 30 seconds.

Landing gear selector valve, P/N 56219, was replaced after 187.7 hours because of an internal leak. Replacement valve, on pre-installation bench check, was found to be leaking excessively through return port in all positions of the valve camshaft. *Recommend* that closer inspection and test of present type valves be made by manufacturer.

Power Plant. Exhaust port stud failures necessitated removal of cylinders 1, 17, and 18 during 240 hour maintenance check. Broken studs could not be removed, and cylinders had to be replaced. Exhaust manifolds were rigid at tail end clamps, and there were no studs missing either on the exhaust extensions or manifolds.

The usual indications of exhaust manifold or extension failure were not evident from the cockpit. These indications in this aircraft are: *1.* a lower than normal cylinder head temperature. *2.* a small amount of smoke or oil steam coming out from one side of the cowl flaps.

Exhaust System. Prototype No. 3 exhaust system with present type of support clamps is considered unsatisfactory after 206.2 hours in which there were three exhaust manifold failures and numerous cases of stud breakage. New method of supporting the exhaust system was installed during 240 hour maintenance check.

Exhaust Troughs. Troughs of .037 stainless steel were installed during the 240 hour check.

Landing Gear. Starboard landing gear fairing was realigned after 196.8 hours. Forward lower check nut, P/N AN 316-7L, was found stripped, allowing after end of the landing gear fairing to lap over the wing surface and causing insufficient travel of wheel pocket door. Adjustment of landing gear fairing and wheel pocket doors *must* be accomplished with aircraft on jacks to impose a force on wing similar to that obtained in flight.

Wing Lock Access Door Latch. Latch, P/N R 42-L-1415, failed after 206.2 hours. Latch tongue, weakened by constant use, broke and was lost in flight. *Recommend* that both the latch tongue and latch release be manufactured from more durable metal such as stainless steel.

Bomb Rack. A manual release for centerline bomb rack, BuAer Service Change No. 14, has been installed.

Electrical. Generator, P/N 86-EC-1298-1-A, was replaced after 206.2 hours when rivets retaining the generator blast tube extension to support housing vibrated loose. New brushes were installed in the Eclipse starter.

Cowl Flap Circuit. Thermo-sensitive element, P/N CR 2992-A 104, of the automatic cowl flap system was replaced after 206.2 hours because of internal failure.

F8F-1B

20 MM Cannon M-3 (T-31) Marked improvement in gun performance was shown for first 12,000 rounds. A complete load was fired out without stoppage on seven flights. After 13,009 rounds, however, stoppages are again increasing, with 25 this interim. Belt parting is still most prevalent stoppage.

The following maintenance procedure is considered significant in the improvement shown this interim in gun performance. Aside from parts replacement after each flight, this procedure was carried out:

1. Every fourth flight (800 rounds per gun), clean barrel and breech, and lubricate gun in plane.

2. Every sixth flight (1200 rounds per gun), remove guns, completely disassemble, clean, inspect and replace worn and broken parts.

Empty cases strike the horizontal stabilizer and elevator most frequently in steady dives of 30°–60° and 300–350 knots indicated airspeed. The cases strike the stabilizer readily at all speeds and dive angles, however, if slight negative G is applied while firing. In two instances the cases have damaged the fabric flap inboard of dural rocket blast protector.

Stabilizer boot, BuAer change No. 6, has given no protection to the stabilizer tip nor to the elevator which was ripped three times in 8,000 rounds. A high speed case ejector appears necessary.

Rockets. Ten loads of five-inch HVAR rockets were fired this interim. Although two loads of three HVAR each, were salvoed because of malfunctioning electrical circuit, no damage to wing flaps was noted other than minor dents and pitting in the dural blast protector.

Four RP igniter receptacles failed in course of three flights. Aluminum casting, P/N NAF 1232, broke in lower section at point where pigtail adapter locks on. New type rockets for which these receptacles were designed are not available at present.

Cause of failure is believed combination of following: *1.* New adapter (which makes possible use of the old rockets with twin bayonet type pigtails) extends so far below the receptable that an added strain is placed on the receptacle when the blast forces the pigtail aft. *2.* This type pigtail is too strong for this combination. No breakaway weak point is provided.

A temporary remedy has been to splice the new-type single-jack pigtails on the rockets before flight. When the single-jack type cannot be obtained, it is necessary to install a clamp on the new adapter. A ⅜" .040 gage steel band around the adapter, secured to lower surface of the wing 3" forward of the receptacle is sufficient. The splicing method is simpler when new-type pigtails can be obtained.

XBT2D-1 (14 Hours' Test)

Elevator Cable. Cable (upper left) fuselage station 200.000 was found to be chafing on transverse radio support channel through which it passes.

Retractable Step. Step, 220.000, loosened from the retracting tubes because of backing out of the ¼" x 28 flat head attaching screws. No provisions were made to prevent attaching screws from backing out.

External Power Receptacle Door. Door, P/N 5251013, is spring loaded with two coil springs at the hinge point. One coil spring has failed, subjecting the leading edge of the door to the air stream. Trouble was corrected with following fix, BIS Yellow Sheet Item #44: *1.* Coil springs were removed. *2.* New access door was manufactured with free end 1" longer than on old door. *3.* AN A4-50 wing type dzus fastener, P/N R-42-F-34920, was installed on free end of the access door.

Dive Brake Fairings. Forward fairings for left and right side dive brakes, station 220.000, gave insufficient clearance for removal of side dive brake hinge bolts. Removal of side dive brakes was impossible without prior removal of forward fairings. Rework described in BIS Yellow Sheet Item #40 has been submitted. Removal time after rework was 2 men, 0.5 hours; prior to rework, 2 men, 4 hours.

Engine Modifications. The following modifications were made on this aircraft engine at

Caldwell Wright Field, N. J., in accordance with BuAer directive.

1. Vertically vented plugged type pistons, P/N 134209, were installed in cylinders Nos. 8, 9, 10, 11, and 12.

2. Bottom rings on pistons 8, 9, 10, 11, and 12 were inverted to scrape towards crankcase.

3. Crankcase jet oil diverter valve assemblies, NO. 435754, were installed in front and rear crankcases.

4. External oil drains were installed on lower intake and exhaust pipes and manifolded to a self-draining tank located in lower accessory cowl panel.

Approximately 15 starts have been made with the above modifications. Decided improvement in shutdown oil drainage is apparent. In starting, only a negligible amount of oil has been thrown on the leading edge of the wing.

SC-2 (71 Hours' Test)

Antenna Assembly. Three failures of the AN/ARC-5 MHF antenna assembly occurred during the first 60 hours of operation. First was break between the antenna post and first insulator and is attributed to crimping of the model J antenna wire during installation of the securing clamps. Second break occurred during next flight at same place after being served by No. 18 copper wire where covered by metal clamps, leaving short spaces of unserved wire. This was repaired by serving the entire length of wire with No. 18 copper wire. Third breakage occurred during the next flight at the male side of the quick disconnect, breaking off two of the spring jaws. Cause of third failure is undetermined.

Wing Handling Line Assemblies. Assemblies, P/N 97-020-1723, for both right and left wings are inadequately secured and pull out in flight. The wing handling line assembly was an SC-2 production installation, adopted from SC-1 Service Change No. 22, Service Bulletin No. C97B29.

Failure was caused by wing handling line assembly being insecurely fastened in the stowed position. Clip for securing the ring in cup assembly was not long enough and did not conform to shape of ring handle. Fuselage skin extending over lower edge of the cup assembly prevented the ring from completely seating. Spring catch, station 39.90 at the wing root, was binding against the fuselage which prevented it from holding the strap assembly securely in position. The rubber door in wing root fillets at station 39.90 did not provide easy access to the spring catch, making stowage of the line assembly difficult.

Assembly was modified by lengthening the clip in the cup assembly and altering the bend to fit over the ring handle. Fuselage skin was trimmed around the lower edge of the clip to permit the ring to seat. The lower spring catch, station 39190 at wing root, was bent to a smaller radius to prevent interference with the fuselage. A hinged access door, 4" x 3", from station 39.90 forward, was added to both left and right wing root fillets, to provide better access to the spring catch. A dzus fastener was provided to secure the lower edge of the access door.

This modification allows the handling line assembly to be secured in the stowed position easily and under sufficient tension to prevent the slip stream from dislodging it.

Oil Drainage. Excessive oil drainage from the lower intake pipes and exhaust stacks is deposited on the main float, creating a personnel hazard. Method of correction is being studied.

Scoop Assembly. P/N 4232502 between cylinders 2-3 and 8-9, supplying direct ram air to the carburetor, collapsed. Failure is believed due to pressure differential existing because of the high velocity air stream through the scoop and to the fact that strength members are not provided in throat of the scoop. Scoops were strengthened locally by addition of two metal spreaders, riveted parallel to the air flow, in the throat of each scoop.

Recruits Meet Marine Aviation

MCAS Cherry Point—AIRFMFLANT has taken over some new aviation duties. Once a month they take one of each type of Marine aircraft and fly them down to Parris Island. There, they hold a one day school in aviation for the new "leathernecks" undergoing training. Instruction is given on each plane type by the pilot of that type, who answers all questions.

The recruits are taken on a tour of the hangars at Page Field and shown how a military airfield operates. Parachutes, flight gear, link trainers and survival equipment

F6F PILOT GIVES NEW MARINES WORD

are included in the demonstration. A portable GCI unit is set up on the field and an intercept problem is run off to demonstrate air defense. The program includes a combined lecture and movie which gives the recruits a detailed picture of Marine Corps Aviation in war and in peace.

NATS, Pacific—The latest mercy flight of NATS was the successful evacuation of Rolf B. Preus, a captain for China National Airways, sole survivor of a crash of a CNAC transport near Shanghai on Christmas day. Suffering a crushed left foot in the accident, he was flown to the mainland by NATS in an effort to save his leg from amputation for the injury.

INDUSTRIAL NOTES

Aviation activities concerned with industrial techniques, modern shop practices and equipment, should be making use of *Industrial Notes*, a service furnished by Bureau of Ships, but with approximately 50 per cent of its distribution going to aeronautical activities.

A Navy publication since 1943, *Industrial Notes* is a pamphlet series becoming increasingly useful in its wide coverage of current technical data. Each issue takes up one specific subject, giving complete but concise information.

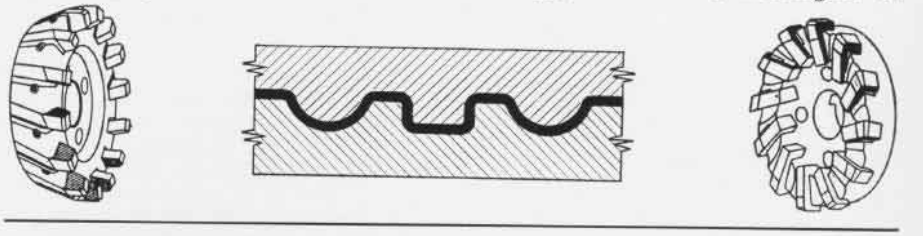
An idea of the type of material handled in *Industrial Notes* can be gained by a few sample subjects from past issues: Care and Maintenance of Welding Equipment; Fundamentals of Coolants; Tube Bending Practices; Proper Use of Jigs and Fixtures; Cleaning and Degreasing. More than 60 such topics have been covered, and a new pamphlet appears every three weeks.

Material contained in *Industrial Notes* represents a summary of technical information gleaned from a wide variety of sources. Current articles in industrial and engineering periodicals are studied and abstracted. All available texts pertinent to the subject under consideration are utilized, with both military and civil sources contributing to the study being made.

Shop supervisors, who would find it impossible to keep up on the latest techniques discussed in countless books and magazine articles, can use *Industrial Notes* to give them the information in convenient, readable form—all in one place.

On the last page of each *Industrial Notes* a bibliography—Naval Industrial Reading Digest—lists and describes the content of technical articles and catalogs applicable to the subject of the issue. Activities can obtain the complete text of any of these articles or catalogs by requesting them through BuShips. This service is of particular benefit to shops which do not have access to a technical library or wish to solve a special problem of their own.

At present 3,500 copies of each issue of *Industrial Notes* are mailed to approximately 400 naval activities. Others wishing to obtain this service in the future should address their requests to the Bureau of Ships, Code 741-D, Washington 25.



AVIATION PROGRESS

Short gleanings from Progress Reports of various BuAer sections are presented below. They represent progress during January, contained in February summaries.

Power Plant Division

Project Squid—A detailed review of all existing work sponsored by government agencies on liquid rockets and pulse jets has been completed. Recommendations will be made for adding tasks to *Project Squid* to cover those points shown to need further basic investigation. Studies on combustion, turbulence, diffusers, materials, instrumentation and valve mechanisms are continuing.

Jet Exhaust Gases—Work is proceeding at NATC PATUXENT RIVER on a test to determine effect of jet exhaust gases on personnel and material found on flight decks of carriers.

P&W R-2800-44 Engines—Increasing demand for electrical power in new aircraft designs makes additional generator provisions necessary and arrangements have been made to provide an additional high speed generator drive with the P&W R-2800-44 engine.

P&W R-4360-4 Engine—The engine contractor has proposed the incorporation of 19 design changes in connection with reorder of R-4360-4 engines. Most of changes were accepted as desirable improvements. The proposal for hooded baffles was not accepted due to adverse affect on cowl configuration of the AM-1 airplane.

Westinghouse 24C Engines—Final coordination of the specification for the WESTINGHOSE 24C engine has been completed. It is desired that Air Material Command review the specifications prior to final approval. Arrangements call for BUAER and Westinghouse representatives to go over specifications with Army personnel at Wright Field.

R-3350-24W Engines—Sixty-seven out of 275 R-3350-24W engines have been modified to date. Modification includes oil drain lines, on oil drain tank, plugged pistons and diverter valves. An XRT2D-1 plane has a completely modified engine installed and will be observed for serviceability of the oil modification fix.

R-2600-20 Engines—Concentric groove valve seats in cylinders installed on R-2600-20 engine have been service tested for approximately 900 hours. During that time three valve seat failures have been experienced. Each failure was similar in that seat was found to be burned along its circumference for approximately 1¼", centered on a line between valve stem and rear spark plug. Valve was in good condition but valve guide was tapered and inside diameter of inboard end was over tolerance. Contractor is checking theory that combustion flame permits heavy unburned carbon deposits to lodge between valve seat insert and valve seat at a point furthest from rear spark plug. This carbon builds up a deposit heavy enough to cock valve and allow blow-by during combustion stroke.

R-3350-24 Engines—Douglas Aircraft Company's daily flight reports continue to list periods of rough running of engines on the AD-1. Degree of roughness varies from a barely noticeable condition to intense detonation and backfiring. Backfiring developed at 10,000 ft. at settings of 1400 and 1600 rpm with 21" of manifold pressure. Investigation indicates cause is not in ignition. Both Douglas and Wright companies are conducting accelerated investigation.

R-1830-94 Engines—Pratt and Whitney has designed a new type center main bearing similar to type used in the R-1830-94 engine. The 50 hour endurance test has been completed. Upon disassembly the bearing spacer was found to be "cocked" on crankshaft. Indications are that bearing "cocked" due to improper installation and not because of faulty design. If second P&W endurance test proves satisfactory NATC will institute a service test on two R-1830-94 engines.

Automatic Spark Advance Mechanism—Pratt and Whitney has received instructions to remove external spark advance mechanism from all present and future Navy production engines without delaying present production schedules. P&W has also been asked to comment on practicability of removal of internal features of spark advance mechanism and to send service instructions for removal of external features from engines now in service. Present installation creates a possible fire hazard by fuel leakage into spark advance lines.

R-4360-4 Engine—An R-4360-4 engine is being installed on an F2G for an accelerated service test at NATC PATUXENT RIVER. Project is to proceed under a "B" priority.

R-2800-18W Engines—Fifteen R-2800-18W engines assigned to VMF-323 are to be modified for service test of non-compensating oil pressure relief valves. Five modified engines are under test to determine service experience on R-2800-"C" engines after removal of thermostatic time delay control assembly from main oil pump.

R-2800-"C" Engines—VF-6B will conduct service tests of re-designed exhaust pipes for R-2800-"C" engines on F4U-4's. Two sets of pipes are to be shipped to NAS BANANA RIVER for testing on PBM-5's. Testing will consist of normal flight operations. Re-designed exhaust pipes differ from presently specified exhaust pipes by featuring a heavier flange at cylinder end with larger reinforcing gussets made of thicker sheet stock.

Jet Fuel—The Army and Navy have reached an agreement on a tentative jet fuel specification designed to provide a fuel of greater availability and to satisfy increasing demands. Specification provides for a fuel of gasoline type with a Reid vapor pressure of 5-8 psi and a final boiling point of between 550° F. and 600° F. Copies of tentative specification are in hands of the petroleum industry for comment. Samples of new fuel have been requested and will be tested jointly by the Army and Navy in jet engines.

Aviation Gasoline—BUAER has informed BUSANDA that future procurement of aviation gasoline for the Navy should be limited to grades 73, 91/98 and 115/145 conforming to requirements of ANA specification AN-F-48. Instruction regarding use of these fuels will be issued in ACL form. Grade 115/145 is being substituted as the Navy's combat fuel.

Airborne Equipment

Corrosion Prevention—The second of two engines, the internal parts of which were protected against corrosion by electroplated coatings has completed 500 hours of test stand endurance operation and is being studied after disassembly at Aeronautical Engine Laboratory, NAMC. Eight other R-1830-92 engines are in process of flight test at NAS Pensacola. Ten R-1340 engines have been electroplated internally, for corrosion prevention, including a porous chromium coating on the cylinder bores.

Paint on Metalite—Two projects are under way to improve adherence of paint to slick Metalite surfaces on the F6U aircraft. Good paint adhesion is vital to aerodynamic smoothness. Phosphoric and chromic acid bases treatments are under study.

Aircraft Paint—A specification has been issued providing use of over-all glossy seablue finish on all fighter, attack, patrol, observation and rotary wing aircraft, also seaplanes and amphibians except primary trainers. Aluminum will be for transport, utility and advanced trainers. Target drones will be red, except that models controlled from the ground will have glossy white upper wing surfaces.

Heat-resistant Finish—Commercial silicones tested have shown unsatisfactory performance, with and without addition of plasticizers and anti-oxidants. Pigmentation of the silicones with aluminum pigment, which has been found to show some progress, was studied further.

Aerodynamic Smoothness—Action has been initiated on a contract for developing a fairing composition or putty for use on seams, butt joints, junctions of metal plates on naval aircraft surfaces to produce aerodynamically smooth contours and eliminating airfoil surface discontinuities.

Bullet-proof Glass—Tests have been initiated to evaluate effect of temperature change on optical stability of precision ground bullet-resistant glass. It is indicated a fairly substantial reduction is possible in wedge-angle tolerances, thus providing a sharper gunsight image.

Nylon Life Rafts—Thirty-day exposure tests of nylon rafts at NAS San Diego indicate the two-ply will withstand sunlight aging better than single ply nylon fabric. Nylon is still considered unsatisfactory for service use, although further tests of

physical characteristics are currently underway. Production of PK-2 pararafts using cotton flotation tube fabric is being recommended.

Fire Extinguishers—Due to possibility of leakage of methyl bromide, which is toxic under certain conditions, it was decided to incorporate a skunk-like odorant in certain methyl bromide extinguishers to warn personnel operating Naval aircraft using this type fire fighter. A new disk seal, recently developed, should prevent any leakage.

Quick Disconnect—Douglas Aircraft has submitted drawings of a proposed composite quick disconnect which will allow all leads between the pilot and plane to be severed with one simple disconnect in the event of a rapid bailout. This includes oxygen, anti-G, electrical and acoustical services.

Pilot Seats—Aircraft accident reports on SNJ models indicate a need for stronger pilots' seats. Results of tests at NAS PENSACOLA indicate seat adjusting pins fail on application of simultaneously applied loads of 4200 lbs. on the lap belt and 2100 lbs. on the shoulder straps. It appears seat installations will withstand about 28 G's. Considerable reinforcement of the installation seems apparent if a 40 G load is to be withstood. Possibility of using the Warren McArthur seat No. 338 in lieu of the 234D seat is being investigated since this seat is designed to withstand 40 G's and has an inertia reel.

Piloted Aircraft

PBM-5A—Construction of a new set of elevator surfaces, incorporating a combination spring loaded, balance and trim tab on both sides, was done at the contractor's plant. Patuxent reported unsatisfactory turning characteristic of the nose wheel due to resistance to turning caused by the dual nose wheel tires.

XJL-1 amphibian—New contract with successor contractor to defaulting Columbia will provide for completing the static test program, completing the second flight article, and the flight test and demonstration of both airplanes.

XJR2F-1 amphibian—First airplane on this contract with Grumman will not be delivered until 15 September. Assembly of a small portion of the hull is currently underway.

XR60-1 Constitution — Twelve flights have been made so far with the first airplane. Stall warnings and landing characteristics seem excellent. Minor trouble may develop with engine cooling. Completion of the second plane is progressing.

XNQ-1 trainer —Contractors flight tests progressing satisfactorily. Second flight article flew in February.

XSN2J-1 trainer—First airplane made initial flight in February.

JRM-2 Mars—Contractor completed installing propeller-driven engine fans and stiffened hull sheets of forward cargo compartment. Plane was delivered to Patuxent.

SC-2 Seagull—Trial Board's fix to eliminate excessive tail buffeting has reduced the stalling speed beyond expectation. Power-off stall has been reduced 10 mph. and it is possible to hold the nose up to the desired attitude.

AD-1 Skyraider—Contractor anticipates meeting delivery schedule of 140 AD-1's by June, 1947, having delivered 18 by 24 January. BUAER standing firm in policy of requiring new aircraft to be ready for service without modification by Navy.

AM-1 Mauler—Due to deficiencies found in the AM-1 at Patuxent, no planes except those for flight test will be accepted until deficiencies are corrected. It is expected delivery to Fleet activities probably will be delayed up to six months.

Ships Installations Division

Arresting Gear — Landings on the U.S.S. *Franklin D. Roosevelt* of an F4U-4 with an instrument hook produced load-time histories that indicate decelerations greater than currently predicted. Representative curves were sent to NAMC for use in connection with similar data to be obtained during investigation of high velocity engagements.

XF6U-1 – A project for development of a barrier and barrier provision for the XF6U-1 is established with completion date set for 15 June 1947. All tricycle-propellerless aircraft will require an installation in plane for either barrier actuation or pilot protection until some solution other than present barrier adapters is realized. NAMC is investigating several ideas at top "B" priority but the final answer is not in sight.

Flight Deck Covering – Two different non-abrasive flight deck coverings have been installed on CVB-42 between arresting wires P2 and P4. It is hoped operations will indicate suitable covering that will be non-skid without causing dangerous wear to arresting gear purchase cables. Other products with slightly different properties will be installed on the U.S.S. *Midway*.

CVB-43 – CNO has approved completion date of 1 October 1947 for U.S.S. *Coral Sea*. Completion date had been 1 July 1947.

Carrier Controlled Approach – CNO has authorized CCA installations on all active carriers that had not been included in previous authorizations.

Design Elements Division

SR-38D—Specifications for the *Demonstration of Piloted Airplanes*, effective date 1 Jan. 1947 sets forth requirements for a three-part demonstration. First part will be completed prior to evaluation of a new model plane by the Navy. Second part extends flight tests to maximum limits approximating those attainable with current service planes. Third part extends flight tests to determine maximum safe operating limits. Division of demonstration will permit a more logical progressive development of experimental planes with view toward early elimination of designs that show little promise of developing into service types.

Oil Systems —*Tentative Gen. Spec. for Aviation Lubricating Oil System* has been redrafted to include requirements for towing up to three grades of oil on CVB's and CV's and two grades on CVL's, CVE's, AV's and AVP's. Two loops have been specified for CVB's and CV's to permit ready availability of oil for conventional and jet engines.

Tool Removes Broken Spark Plug

NAS QUONSET POINT—A&R department has developed a small kit of tools to remove broken spark plugs from cylinder heads without removing the head from the engine. Usual methods of removing broken threads are ordinarily inadequate and the problem of removing a broken

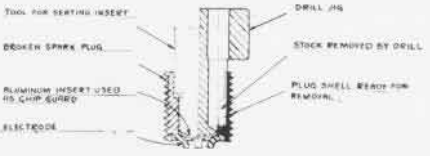
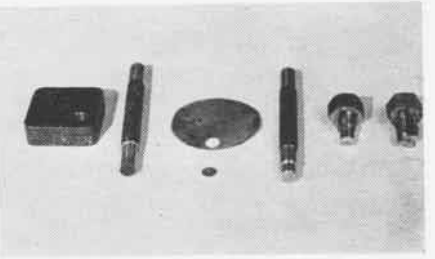


DIAGRAM SHOWS APPLICATION OF TOOLS

plug, especially in the field, is often difficult.

As illustrated here, six tools were developed, reading from left to right: die, punch, aluminum stock with punched insert in foreground, inserting tool, drill jig and wrench. The first step in the process of removing the broken plug is punching a small circular disk from a piece of scrap aluminum. This small insert is forced into the bottom of the broken plug with the inserting tool. Purpose of the insert is to prevent chips from falling into the cylinder head.

The next step is drilling four holes to fit the wrench, the drill jig is then put

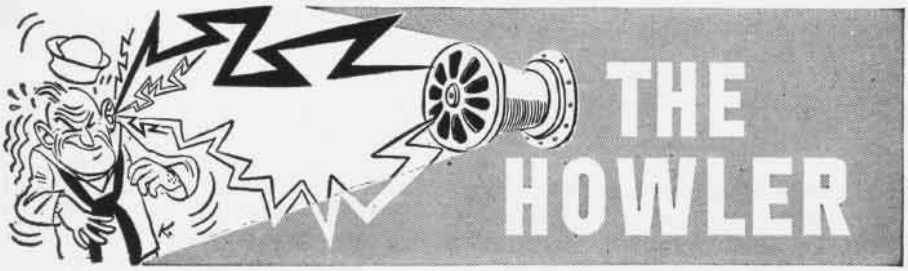


SIX TOOLS REMOVE BROKEN SPARK PLUGS

into position and the wrench inserted to remove the plug. Interested activities can secure a sequence of pictures showing steps in the operation from this station.

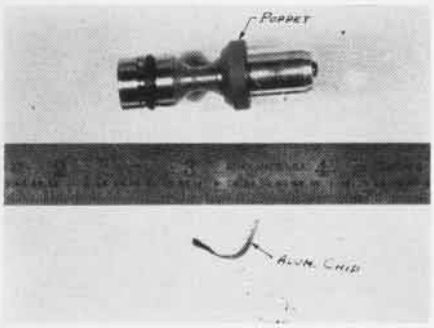
[DEVELOPED BY ARMAND F. JOLY, CHIEF DRAFTSMAN]

▶ ***BuAer Comment*—This method may work in some cases; however, it is doubted if badly seized plugs could be removed thus. Nevertheless the plan may preclude cylinder changes whenever its use is successful. BuAer will appreciate comments, favorable or otherwise, concerning application of this method in spark plug removed.**



Hydraulic Trouble, F4U-4 Landing Gears. Difficulty in extending the landing gear on an F4U-4 during flight test at the contractor's plant was traced to the presence of an aluminum chip lodged under the return poppet in the middle bank of the three-bank selector valve which operates the landing gear.

The metal chip (see photos), which caused the trouble, was later determined to be of wrought aluminum alloy, while the valve housing is a cast aluminum alloy. It is believed that the chip entered the valve either during the assembly or at



TINY METAL CHIP FOULS UP HYDRAULICS

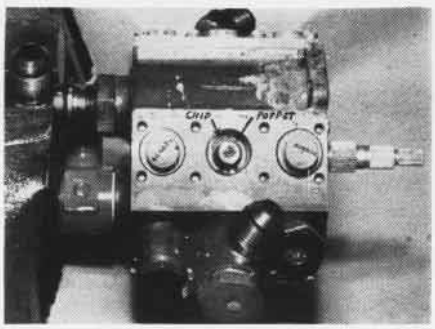
time of testing at the vendor's plant.

Since there is possibility of similar trouble in service operation – although stringent precautions have been taken to prevent it–operating activities are being informed of the procedure used to bring the landing gear down in this instance.

When radio communication from the pilot described difficulty in operation of the landing gear, an observer went aloft in another plane in an effort to detect possible loss of hydraulic fluid from the F4U-4 in trouble. There was no perceptible external leakage. Since there was a possibility that a binding condition existed in the landing gear linkage, use of the CO_2 emergency extension system was not advisable except as a last resort, lest it cause jamming of the gear in an intermediate position.

The pilot reported that when the landing gear lever was moved to the down position, the tail wheel and landing gear door extended and the hydraulic pressure dropped to approximately 200 p.s.i., which was not enough to break the down lock of the main landing gear and to extend the gear. Full hydraulic pressure, however, could be maintained with the landing gear lever in the neutral, or intermediate, position and in the up position.

This indicated that there was no internal leakage in the cylinders; it was evident that the internal leakage was occurring in the selector valve. (The chip lodged



LANDING GEAR SELECTOR VALVE BLOCKED

under the return poppet caused the poppet to remain partially open, permitting hydraulic fluid to flow out of the return port of the valve back to the reservoir without exerting adequate pressure on the landing gear cylinder line.)

By repeatedly moving the landing gear lever from the intermediate position to the down position, it was possible to build up a momentary initial hydraulic pressure surge, producing in the cylinder a momentary pressure great enough to actuate the gear. Although the same effect could be achieved by moving the landing gear lever from the up position to the down position several times in succession, this was considered impractical since the initial effect of the pressure surge would be used in extending the tail wheel and the main landing gear doors each time the process was repeated.

In accordance with ground instructions, the pilot moved the landing gear lever back and forth between intermediate and down, holding it in the intermediate position long enough to build up hydraulic pressure. The resultant series of hydraulic surges was strong enough to move the landing gear down in several increments until finally the landing gear was locked in the down position–as verified by the observed in the other aircraft.

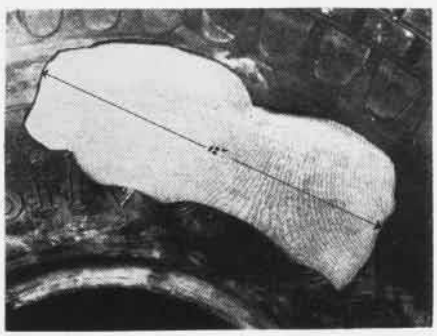
Although the contractor does not recommend this method as standard operating procedure, it can–as demonstrated in this instance–be used satisfactorily in an emergency to extend the landing gear in case of malfunctioning of the landing gear selector valves. Operating personnel should be aware of the possibility.

Precautions With Wooden Plugs. When wooden plugs are used as closures for tubes, hoses, or fittings, there is a strong possibility of a chip of wood breaking off and entering the fluid or air system. This would result in malfunctioning of the system.

To eliminate such difficulties the following precautions should be taken whenever a wooden plug is removed or installed as a closure for a tube, hose, or fitting: *1.* Take care not to chip the wood. 2. Examine plugs prior to installation to insure that they are smooth and round. Plugs with chips or slivers should be scrapped. 3. Thoroughly inspect the inside of the hose, tube, or fitting for any wood chips or slivers that may be inside and see that they are removed.

Tire Trouble. A section 12" long and 4" wide stripped from the inboard sidewall of tire mounted on port main landing gear of a PV-2 aircraft. Plane was taxiing from line preparatory to take-off when failure occurred. Pre-flight inspection showed no cracks or other sign of deterioration. It was a re-built tire of ten ply construction.

According to BuAer comment on this RUDM, the sidewall separation probably occurred during reconditioning when the curing mold pressure plates caused the rubber veneer to splay apart from the fabric. It is believed that the area of separation does not extend into the tread.



RECONDITIONED TIRE FAILS ON FIRST TRIP

Technical Order 44-46 states that size 16.00-16 aircraft tires shall have a minimum of 12 plies of either rayon or nylon fabric. This ten ply tire and all other size 16.00-16 tires of ten ply fabric construction should be disposed of in accordance with existing disposal regulations.

All RUDM's on aircraft tires should contain the specific information needed by BuAer to determine if the reported item is defective and subject for adjustment consideration. Activities should follow the procedure outlined in Aviation Circular Letter 162-46, giving *accurate* information. In this particular case, the photograph enclosed showed that the RUDM had listed the wrong tire manufacturer.

Fasteners on Mk 2 Life Vest. Activities using the Mk 2 life vest are cautioned about the danger involved in the inadequate lift-the-dot fasteners originally used on this equipment. Recently a pilot crashed at sea during carrier qualifications and was drowned. He was floating face downward in the water although his life vest was fully inflated. The snaps securing the front lobes of the vest evidently pulled open when the vest was inflated, allowing the inflated portions to spread out and permitting the head to hang in the water.

Subsequent tests conducted by the squadron showed that on a large percentage of the vests the snaps popped open when the CO2 toggles were pulled.

This condition was discovered by BuAer

TEST SHOWS PERIL AS VEST PULLS OPEN

in the production of the life vests, and action was taken to have the contractor install the large lift-the-dot fasteners.

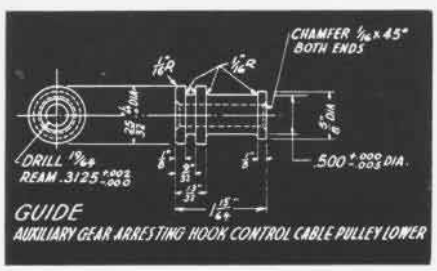
BuAer Technical Order 45-46, dated 19 December 1946, provided for the modification on vests previously delivered to service activities. Compliance with this directive will obviate the danger.

FASTENERS FAIL TO HOLD ON VEST LOBES

8F-1 Arresting Hook Lowering Mechanism. Several cases of mislocated lower cable guide-bolt holes in the pulley assembly bracket of arresting hook lowering mechanism have been reported to BuAer.

As soon as parts become available, the contractor will incorporate a redesigned guide assembly in production aircraft to reduce the possibility of an external cable wedging into the guide.

Although the present guide is considered serviceable, in order to eliminate any potential source of trouble, it is recommended that service personnel inspect for excessive clearance between roller and drum. All cases of improperly located holes may be corrected by the installation of an oversized guide similar to that shown in the accompanying drawing, reproduced from Grumman drawing for P/N 56058.



SUPPLY NEWS
FROM ASO AND SUPPLY DIVISION BUAER

Overhaul of Class 265 Material

ASO Circular Letter #191 establishes a standard procedure for the submission of requirements for the repair of Class 265 material. Under this procedure Class 265 articles will not be overhauled when there is sufficient stock in the system as a whole. Furthermore a minimum number of items will be scheduled to maintain minimum working stocks.

ASO will forward to each Class A overhaul activity the 90 day stock requirements to be met from overhaul of Class 265 material 60 days prior to the requirement date. All major supply points and dependent activities will submit an inventory of Class 265 material on ASO form 130-A (revised 10/14/46) as of the last day of December, March, June, and September to arrive at ASO prior to the 10th day of the following month.

As indicated in the circular letter, problems will arise in the application of this procedure that may necessitate changes in or amplification of the established procedure. Accordingly it is urged that comments or suggestions be submitted to the ASO whenever appropriate.

Index Tabs Aid In Using Catalog

The ASO Catalog Group, investigating the possibilities of providing index tabs and separators for all ASO Catalog holders, found that budgetary limitations made this impossible. It was brought out, however, that each Catalog holder could, by obtaining the items listed below from a standard stock, class 53 of the General Stores Section, Catalog of Navy Material, economically make up his own separators and index tabs as required.

Tabs are available in four colors and may be ordered in color desired: paper, white bristle—53-P-13310; tabs, index, yellow—53-T-268-85; tabs, index, green—53-T-268-45; tabs, index, pink—53-T-268-60; tabs, index, blue—53-T-268-25.

To assist each holder of the ASO Catalog in setting up the separators and index tabs, the Catalog Group has included on the last page of ASO Catalog, Sections 7701, 8221, and 8701 an illustration indicating the right and wrong ways.

Unused Stock Numbers Explained

Questions have come up regarding the meaning of stock numbers in Class 88 which are designated as cancelled. The word "cancelled" placed by the stock number shows that one of the following actions has been taken:

1. The contract on that particular instrument was never made although some samples may exist in stock.

2. The instrument was used only for experimental purposes, not operational.

3. The instrument never got beyond the drawing board and/or specifications stage.

4. The instrument was transferred and/or already stocked under another Class 88 number.

These cancelled stock numbers are furnished only for purposes of information and possible identification of instruments which are sometimes found under local stock numbers.

Make Correction On ASO Catalog

The following correction should be made on Page 6 of Section 8301 (Tires and Tubes) Second Edition, dated November 1945:

Under Type VII "Extra High Pressure" in table directly below, in column one, item 65, following through to column seven, change all stock numbers R83-T-11590 to read R83-T-11950

Listing Of Electronic Surpluses

Advance Change 32-46 to PR & D Regulation #1 establishes a new procedure for the reporting of surplus electronic material. Paragraph 503.5 of this change advises that WAA will compile a list of electronic items which may be disposed of as scrap.

Until this list is released by WAA and subsequently published by ASO, activities are advised to inventory all unclassified and usable surplus materials to WAA in accordance with paragraphs 503.7 through 503.9 of Change 32-46. During this interval screening for unsalable items will be accomplished by WAA.

Paragraph 503.1 of Advance Change 32-46 to PR & D Regulation #1 directs that classified electronic items be disposed of in accordance with specific instructions of the cognizant bureau. ASO Circular Letter #179 dated 31 July 1946 is in the process of revision and will contain revised instructions for the disposition of this type of material.

Dry Charged Storage Batteries

In the past BuAer contracts for Class 17 storage batteries have included a provision for furnishing vent caps to the battery contractor as G. F. E. Such batteries were then supplied with vent caps installed.

Batteries, with or without vent caps installed, and spare vent caps, are hereafter to be stocked separately under individual stock numbers. Except by specific instructions to the contrary, appropriate vent caps will be issued with all batteries.

MCAS El Toro — Daily trans-Pacific flights from El Toro to Hawaii and Guam recently were launched. Three round-trip flights a week are scheduled to MCAS Ewa by MAG-25 and two hops a week to Guam with planes stopping at Rogers Field, Honolulu to do refueling.—*Flight Jacket.*

AVIATION ORDNANCE

INQUIRIES SHOULD BE ADDRESSED TO THE CHIEF OF BUREAU OF ORDNANCE

De-Preservation Data on Aircraft Guns

At the present time BuOrd is preserving large quantities of aircraft guns for long-term storage with Corrosion Preventive Compound, AN-C-52 Type 1. In addition, aircraft guns in aircraft in storage pools are being preserved with this compound. As it is likely that at times activities may receive aircraft guns preserved with AN-C-52 Type 1, the following information may be useful when cleaning guns so preserved.

1—General Instructions Applicable to all Cleaning Methods:

(a) Thorough de-preservation of guns is absolutely essential for proper functioning. It is important that no trace of preservative compounds remain in the working parts of the guns, as the solidifying of these compounds at low temperatures will render the guns inoperative.

(b) Guns which are covered with light or heavy, rust or corrosion preventive compounds should be disassembled for cleaning.

(c) The use of caustic, soda ash or soap cleaners for cleaning should be discouraged as they tend to destroy the corrosion resistance of the phosphate coating applied to the gun parts.

(d) All gun parts should be thoroughly inspected to insure that every trace of corrosion preventive compound has been removed during the depreservation process.

(e) Parts should not be handled with bare hands during the cleaning process; nor after cleaning until a coating of Oil, Lubricating Preservative, Special os1361, has been applied to the parts. Clean canvass gloves, synthetic rubber gloves, or their equivalent should be used.

(f) In the event parts are handled with bare hands after cleaning and before the oiling with Oil, Lubricating Preservative, Special, os1361, parts should be rinsed by immersion (and agitation if possible) in perspiration residue-removing solvent. Immediately dry the parts after immersion in perspiration residue removing solvent with prepared compressed air blasts or in an oven; or wipe dry with a clean dry-cloth if neither of these are available.

(g) Immediately after cleaning and inspection all inorganic parts should be oiled with Oil, Lubricating Preservative Special, os1361, and lubricated in accordance with OTI GV30-43.

(h) Parts or assemblies containing organic materials, and/or specially packed lubricants (graphite) will not be subjected to vapor or solvent spray de-greasing, or immersed in cleaning solvents. Such parts or assemblies shall be cleaned with Petroleum Solvent (PS661) applied by means of a clean brush or cloth soaked in the solvent.

2—De-Preservation Methods (any of the following methods may be employed, depending upon the facilities available to the de-preserving activity).

(a) Vapor type degreasing. (Trichlorethylene or tetrachlorethylene).

(1) The care and operation of the vapor degreasor is standard practice and need not be elaborated on here.

(b) Solvent Spray Degreasing.

(1) Solvent spray is preferably a high flash point relatively non-volatile solvent capable of removing greases, preservation oils, and such other miscellaneous dirt as may accumulate from service. The most common of these materials is Stoddard's solvent, Federal Specification P.S. 661a.

(2) In use, the booth should be enclosed on three sides preferably forced draft vented to remove vapors which may become irritating to the operator.

(3) Solvent booths should be of sufficient size to permit rapid and easy movement of the parts to be cleaned, and of sufficient reservoir to maintain constant stream from the gun.

(c) Solvent Immersion Cleaning.

(1) Clean the parts by immersion (and agitation if possible) in petroleum solvent (PS661). Cleaning periods should be long enough to insure complete removal of contaminants but in no case should this period be less than one minute.

(2) Brush or scrub parts whenever possible to aid and speed cleaning.

(3) After the required cleaning period, remove the parts from the solvent and drain off the excess solvent.

(4) Immerse the parts in a second tank of clean petroleum solvent (agitate if possible) for at least one minute. This second tank of clean solvent should be used to remove only the film of contaminated solvent remaining after immersion in the first tank. All solvent or oily contamination, as such, should have been removed in the first tank.

(5) If necessary, rinse parts in perspiration residue removing solvent, after draining the previously applied cleaning solvent from the parts. Solvents incorporating perspiration residue removing properties are: methanol, Cosmoline 266, and solvent combinations which usually contain some type of petroleum solvent, a surface active-oil soluble soap, and five to ten per cent water by volume.

(6) After cleaning, drain excess solvent from the parts and dry with prepared compressed air blasts, or in an oven; or wipe dry with a clean dry cloth if neither of these is available.

(7) Oil all parts, and lubricate the gun in accordance with OTI GV30-43.

(d) Petroleum Solvent Cleaning by brushing or wiping.

(1) Clean the contaminated metallic areas of parts or assemblies with petroleum solvent (PS661). Apply by means of a clean brush or cloth soaked in solvent.

(2) Cleaning should be done by a combination of soaking and scrubbing or wiping.

(3) Application of cleaning solvent should be repeated until all contamination is removed.

(4) Rinse parts in perspiration residue removing solvent if necessary.

(5) Immediately after cleaning dry the parts with prepared compressed air or in an oven; or wipe dry with a clean dry cloth if neither of these is available.

(6) Oil and lubricate all parts of the gun in accordance with OTI GV30-43.

Line Maintenance Spare Parts Lists

To provide BuOrd with a complete inventory of line maintenance spare parts for Aviation Ordnance Equipment available in the Aviation Supply System, N. Ord Form 1823, *Line Maintenance Spare Parts Lists and Quarterly Report*, listing all such parts, has been compiled and distributed to major and minor supply points. The form lists all parts required for line maintenance of all current items of Aviation Ordnance.

It also shows the interchangeability of parts between various Marks and Mods of equipment, and eliminates the necessity for duplicate stocking of parts, common to more than one type of equipment. This form should prove of special value where equipments, having components now in stock are being introduced for Fleet uses. It eliminates the necessity of procurement of spare parts already available within the supply system.

Stock Numbers for 20mm AN-M2 Guns

At the present time the 20mm AN-M2 (Type E) aircraft guns (1-G-5599) are being stocked complete with AN-M1 adapter (1-A-56), the M1 hydraulic charger (1-C-3412-50) and the AN-M1 electric trigger (1-T-2890-10).

This gun is gradually being replaced by the 20mm M3 (1-G-5599-150) and therefore it is not considered advisable to continue to stock the AN-M2 gun complete with accessories since those items are in short supply.

In order to implement this program all AN-M2 guns now going through overhaul will be preserved for long term storage and packaged minus the AN-M1 adapter, M1 hydraulic charger and AN-M1 electric trigger. The guns so packaged will then be known as 20mm AN-M2 Type E (Basic) aircraft guns, Stock Number 1-G-5599-100. The individual accessories removed from the gun will be stocked individually under their own assigned stock numbers.

It is the intent of this change to gradually consume all stocks of 20mm AN-M2 guns (1-G-5599) until eventually only the basic 20mm AN-M2 gun (1-G-5599-100) is stocked. This program will also make available additional quantities of accessories for the guns for individual issue.

First P2V's to Have .50 Cals.

As a temporary measure, the first 17 P2V-1 airplanes are to have improved caliber .50 mounts. Ground firing tests of the Mk III and Mk IV gun mounts were conducted by Lockheed at Port Hueneme, Cal., and witnessed by a representative of the Turret Branch, Bureau of Aeronautics.

These mounts are in general the same type as used in the PBJ (*Mitchell*, B-25). The modified mounts are considerably better than their forerunners in that gun sight vibration and gun fire dispersion were reduced to an acceptable amount. These mounts (nose and tail) are to be installed in the 17 P2V-1 airplanes.

In the P2V-2, the nose mount will be replaced by a 6 x 20mm fixed gun nose. The tail mount (Mk IV) will be replaced by the turret, tail AERO 11A (a 2 x 20mm Emerson Tail Mount) commencing with the 24th P2V-2 airplane.

It was a P2V, the *Truculent Turtle*, which flew non-stop from Australia to the United States to establish a new long distance flight record of more than 11,000 miles.

DROPPABLE LIFE RAFTS FIT BOMB BAY

UTWINGSPAC—Utility Squadron 7 at NAS SAN DIEGO has developed a compact unit for search and rescue work and by installing it in all of its TBM's has them available for use at any time.

It is felt that this installation is far superior to the life raft kits previously used and does not jeopardize the safety of the crew. The emergency equipment, as assembled, can be mounted in the bomb bay of other type aircraft. If desired, the equipment can be ejected by hand from the after station of an aircraft. Static lines must then be secured to structural members located at that station.

Features of this equipment and procedure are:

1. Inflation of life raft during descent, thereby reducing risk of raft splitting upon impact.

2. Full extension of the manila line between raft and rations, thereby affording a better chance for personnel in the water to recover equipment.

3. Parachuting of emergency rations reduces possibility of breakage.

4. Rations and parachute act as a sea anchor for the life raft until retrieved.

The emergency equipment used is standard Navy equipment: one Mk 4 life raft, one Mk 4 emergency rations and first aid kit; one parachute as used with a Mk 8 parachute flare; one chute container of gray canvas using grommets at top to secure static line and closed container. Two hundred feet of six-thread manila line is coiled along the raft. One end is attached to the raft, the other to the rations.

Thirty-two 8" pieces of 1/10" thick cork, spaced every six feet, wrapped around the 200 feet of line with scotch tape to provide buoyancy and painted yellow for visibility. Webbing used in securing life raft is type eight linen thread and has a tensile strength of 2900 lbs.

RAFT ON LEFT; RATIONS CHUTE ON RIGHT

Two static lines are required, each 15' long, sewed double, back to back, type one linen thread, with a breaking strength of 350 lbs.

The Mk 4 life raft and line are secured on the #5 position bomb shackle, forward in the bomb bay, with static line running through bomb bay and into the after station, the bitter end being secured in after station. Emergency rations and first aid kit are secured on No 10A position bomb-shackle with its static line attached in the same manner as life raft. When the gear is released from the bomb bay, it will fall in salvo and the static line will trip the CO_2 bottles in the life raft and the parachute attached to emergency rations kit. When the gear hits the water, the raft is inflated and the cork-wrapped line is in the extended position. Total weight of the gear is 105 lbs.

Suggested procedure for dropping search and rescue gear:

1. Upon first sighting personnel in distress the pilot will circle and drop a standard float light to mark the position and give wind direction.

2. Turn and prepare for making a standard field approach.

3. When on the downwind leg, abeam of the float light, open bomb bay doors.

4. Continue in pattern, reducing altitude to 200 to 300 feet and speed to 120 k.

5. Plan to drop rescue gear on the upwind leg so that it will land upwind of personnel in the water.

6. Drop the rescue gear when almost directly over the personnel in the water by pulling the emergency bomb salvo handle.

BuAer Comment—In the event that a rescue of more than one group of survivors is planned, the salvo method dropping is not good. Therefore recommend that, in use of TBM or other plane with large number of racks, procedure be based on use of electrical system to fire designated racks by station selector switch and related ordnance electrical equipment. Believe VU-1 has overlooked flexibility of ADR-1 and ADS-1 to such an operation. Their use eliminates employment of parachute.

The merits of dropping rafts inflated or deflated is debatable. Believe that deflated drops made at altitude of 50 to 100 feet at IAS 90-100 k. will give better placement and reduce any damage due to impact. When a raft is dropped inflated, even using the Mk 8 chute as an anchor it still can swing around in a 200' radius which might, due to wind and placement, cause it to get away from the survivors. In combat it might be desirable to have the raft land deflated for tactical reasons—and for training purposes believe that all indoctrination should be with the thought of actual combat in mind.

Believe any doctrine pertaining to S&R should be based on conditions: *1.* Survivors in life jackets. *2.* Survivors in one-man rafts. The method will vary with each condition, due to the difference in drift of personnel in a raft or floating in the water.

In lieu of 200' of six-thread line with the cork floats, it is suggested that units draw lengths of ASO Stock No. R21-R-300, rope floating, for use in its stead. This rope is identical with that supplied with AR-10 boats dropped from flying aircraft.

RAFT AND RATIONS FALL AS CHUTE OPENS BELOW RESCUING TBM

CHUTE SLOWS DROP AS RAFT INFLATES WHEN NEARING WATER

FEBRUARY SUPPLEMENT

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§Classification of Naval and Marine Corps Aircraft Overhaul Repair and Maintenance Activities Ashore.	176-46
§Distribution of Naval Aircraft.	5-47
§Aircraft Model Designation XF7F-4N; establishment of.	11-47
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Performance and Characteristic Data

§U. S. Navy Service Airplane Characteristics and Performance Data Sheets of, Jan. 1, 1947. NavAer 00-45RA-521

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Carrier-Based: SB2C-4, -4E, Revised Feb. 1947. NavAer 00-35QB-26
Other Types: §JD, Feb. 1947. NavAer 00-35QB-60

Section G (Shop Equipment)

Section G Shop and Ground Equipment for Class C Maintenance Activities, Reissued Oct. 1946. NavAer 00-35QG-11

Section P

Shipboard Laboratories (Other than Aircraft Carriers), Reissued Mar. 1947. NavAer 00-35QP-3

Section R

§Aeronautical Electronics Material for AN/ARC-1, Jan. 1947. NavAer 00-35QR-31

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Athletic Equipment for Aviation Physical Training, Naval and Marine Activities, Re-issued, Feb. 1947. NavAer 00-35QS-1

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TBA for Streamlined Squadrons, Re-issued Mar. 1947. NavAer 00-35T-8

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§Baroswitch Computation Sheet, 100 sheets to each pad. NavAer 444B

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§Handbook of Operation and Service Instructions for AN Electrical Connectors, Feb. 1, 1947. AN 03-5-90

Hydraulic Pumps

§Operation, Service and Overhaul Instructions with Parts Catalog for Model 1P-196A Hydraulic Pump, Dec. 15, 1946.	AN 03-30CB-12
Operation, Service and Overhaul Instructions with Parts Catalog for Constant Delivery Pumps PF-3911 Series, Rev. Sept. 30, 1946.	AN 03-30CH-16

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Operation, Service and Overhaul Instructions with Parts Catalog for Bendix Wheels, Rev. Nov. 26, 1946. AN 03-25C-9

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Airframes

Pilot's Handbook for B-17G Airplane, Rev. Oct. 21, 1946.	AN 01-20EG-1
Parts Catalog for Army Model B-17G, Re-issued Sept. 1, 1945.	AN 01-20EG-4
Parts Catalog for Army Models UC-45B and UC-45F Navy Models JRB-3, -4, Rev. Dec. 23, 1946.	AN 01-90CD-4
Pilot's Handbook for Army Models C-46, -A, -D, -F and Navy Models R5C-1, Rev. Dec. 16, 1946.	AN 01-25LA-1

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§Designates New Publication

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§Parts Catalog for Pressure Autosyn Transmitters, Rev. Nov. 7, 1946.	AN 05-55B-10
§Parts Catalog for Fuel Flow Autosyn Transmitters, Re-Issued, Nov. 8, 1946.	AN 05-55B-11

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Modification Instructions for Aircraft Engines R-1340 Series, Rev. Nov. 15, 1946.	NavAer 02-10D-500
Parts Catalog for Aircraft Engine Model R-1830-92, Rev. Jan. 1, 1947.	AN 02-10CC-4
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Modification Instructions for Aircraft Engines R-3350 Series, Rev. Jan. 1, 1947.	NavAer 02-35J-500
Parts Catalog for Aircraft Engines Models R-3350-8, -14, -24W, Rev. Dec. 1, 1946.	AN 02-35JB-4
Modification Instructions for Aircraft Engines R-4360 Series, Rev. Feb. 1, 1947.	NavAer 02-10H-500

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§Preliminary Handbook of Maintenance Instructions for AN/DPN-1 Radar Set (SWOD) Mark 2, Mod. 1, Mar. 27, 1945.	CO-NA 16-30DPN1-500
Handbook of Operation and Maintenance Instructions for TS-148/UP Test Equipment Spectrum Analyzer Rev. June 15, 1945.	AN 16-35TS148-5
§Instructions Book for Signal Generator TS-202/U, Mar. 12, 1946.	NavAer 16-5S-528
§Handbook of Maintenance Instructions for Range Coordinator SN-48/AP (Range Unit Mk 9 Mod 0) Sept. 30, 1946.	CO-NA 16-35SN48-500

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Deputy Chief of Naval Operations

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§Meteorology Grows Up, Dec. 1946.	NavAer 50-1R-195
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§Designates New Publication

Prod Aids In Circuit Testing

NAVAL GUN FACTORY—A novel test prod, possessing a wire clamping feature that aids in obtaining accurate and reliable information from tests of electrical and electronic equipment, has been developed at this activity through the Navy Employees' Suggestion Program.

The prod is made with a small hook near its outer end that is enclosed in a slidable plastic sleeve. A small internal spring provides sufficient pressure to support the weight of the prod or small parts being tested.

The test prod is clamped to one lead while the other prod is used to check various connections in the circuit under test or both prods may be clamped to the desired leads for tests of longer duration.

This device has proved to be a handy and useful addition to the test equipment at this activity.

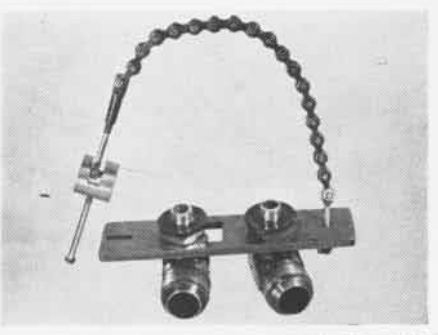
[DEVELOPED BY EDGAR B. GREEN]

GADGET IS CAPABLE OF CLAMPING WIRE

Pump Connection Speeds Testing

NAS SAN DIEGO—A pump stand hose quick connection invented here recently is expediting testing and increasing capacity of the test bench. Use of the device eliminates screwing the intake and exhaust hoses on and off the pumps. This saves approximately 15 minutes a pump resulting in an annual saving of over $700. per year.

[DEVELOPED BY S. G. GREER, AMG, MAX.]



PUMP IS MOUNTED EASILY ON NEW DEVICE

LETTERS

SIRS:

The current shortage of personnel within this command has accustomed us to the usual sights of officers polishing, gassing and checking aircraft. This is in line with VA-6A's time-proven spirit.

But the best indication of this spirit is the picture (*see cut*) taken one morning when our mascot, "Blu-Nose" gave up a life of retirement and took over the controls of a tow-tractor.

"Blu-Nose," without past experience, towed aircraft, pulled chocks, handled firebottles and stood sentry duty at night. He inspired the entire squadron with this display of canine enthusiasm. New records for availability and operating time have been set since this incident.

The dog is a Russian Samoyede and is considered to be the roughest and toughest fighter in the Eleventh Naval District.

A. G. RUSSELL, LT. COMDR.
VA-6A,
U. S. PACIFIC FLEET

SIRS:

Latest to endorse the Navy's Ground Controlled Approach system of landing planes safely despite adverse weather is "Pinky," youthful product of a K-9 wartime romance. Interviewed yesterday at the Naval Air Station, Floyd Bennett Field, Pinky declared emphatically: "Arr-rrf Grmmph, bow-wow-wow, grr-rf."

Lt. Comdr. Pat Sullivan, a crony of Leprechauns and the Little People, (and incidentally, Public Information Officer), served as interpreter and translated Pinky's statement: "I've been hearing a lot about this GCA unit which lands planes safely even though it's raining cats and dogs. Now that I've seen it in operation, you may quote me as saying that GCA is really tops, top-sirloin, that is."

Pinky, who was born in the Jacksonville, Fla., K-9 station two years ago, is the mascot of GCA unit "Canary" stationed at Floyd Bennett. His master is Motor Machinists Mate First Class Thomas L. Morse, one of the members of the GCA crew. Pinky follows Navy regulations, more or less. He carries his I.D. card with him at all times, musters with the crew each morning, "stands a watch" whenever his master does, and never has been known to miss a chow-call. His appearance reflects a somewhat bizarre international ancestry, German-Shepherd and Collie.

PAT SULLIVAN, LT. COMDR.
PUBLIC INFORMATION
NAS FLOYD BENNETT

SIRS:

The station swimming pool has proved to be an excellent recruiting agent in the Reserve program. It serves to keep the "boss" happy while the junior member is out getting in his time. While hubby is doing his dives from "30,000 feet on his back" wifey is experimenting with shallow dives off the low board—which is infinitely better than just being "bored" by it all.

These four Saturday afternoon Reserve widows add something to the Florida scene.

Photograph furnished by courtesy of *Miami Herald* Staff Photographer.

H. A. KINCHLEY, CDR., USNR
PUBLIC INFORMATION OFFICER
NAS MIAMI

NAVAL AVIATION NEWS

Published monthly by Chief of Naval Operations (Op-50-D) and Bureau of Aeronautics to disseminate safety, survival, maintenance and technical data. Air mail should be used if practicable, address to: Chief of Naval Operations, Naval Aviation News, Navy Department, Washington 25, D. C. Direct communication can be made to Naval Aviation News, Room 4927, Main Navy Bldg., office telephone extension 61662.

The Cover Pick up on your left wing, signals the landing signal officer on a carrier as a *Hellcat* comes in for landing. Lifeguard destroyer trails behind, on horizon, ready to pick up unlucky aviators who may land in water.

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ANSWERS TO QUIZZES

● RECOGNITION QUIZ
(inside back cover)

1. H.M.S. Vanguard (Br. BB) 2. U.S.S. Herzog (DE-178) 3. U.S.S. Fresno (Oakland class CL) *4.* AGS Survey ship 5. Oregon City class CA.

● NAVIGATION QUIZ (p.17)

1. 296° 2. 172K 3. 294° 5. 300° 6. 182K 7. 1441 *8.* Lat. 35° 19' N, Long 156° 55' E 9. 111° *10.* 1541.

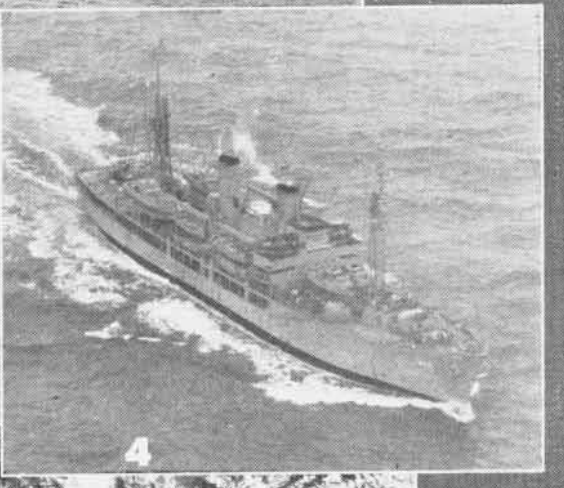
● GRAMPAW QUIZ (p. 7)

1. Close throttle and pull RPM control all the way back. Ref: T.N. #20-46.
2. (a) CO_2 system should be used first in an emergency. Ref: F4U-4 Pilot's Handbook.
3. Normal rated power is maximum power for *continuous operation*. Take-off power is usually limited to five minutes. See Pilot's Handbook for specific models and engines.
4. Clear runway immediately and wait for further instructions. Ref: Army-Navy-CAA Airport Traffic Control Procedure.
5. False. A recent statistical study shows that the life expectancy of a Naval Aviator is 12 years less than that of the Average civilian.

● AIR STATIONS QUIZ
(inside front cover)

Top—NAS Banana River. Bottom—NAS Los Alamitos

1947'S FIGHTING SHIPS



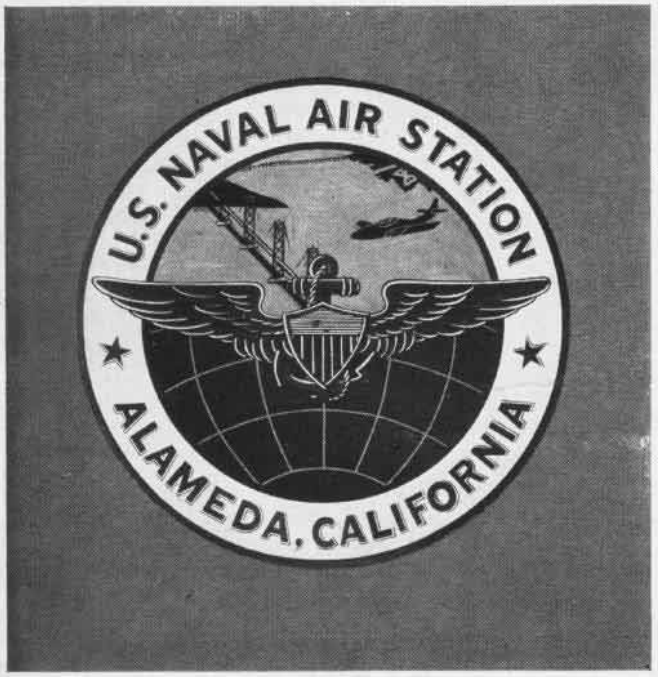
RECOGNITION QUIZ

NAVAL AVIATION NEWS

ANSWERS ON PAGE 40

SQUADRON INSIGNIA

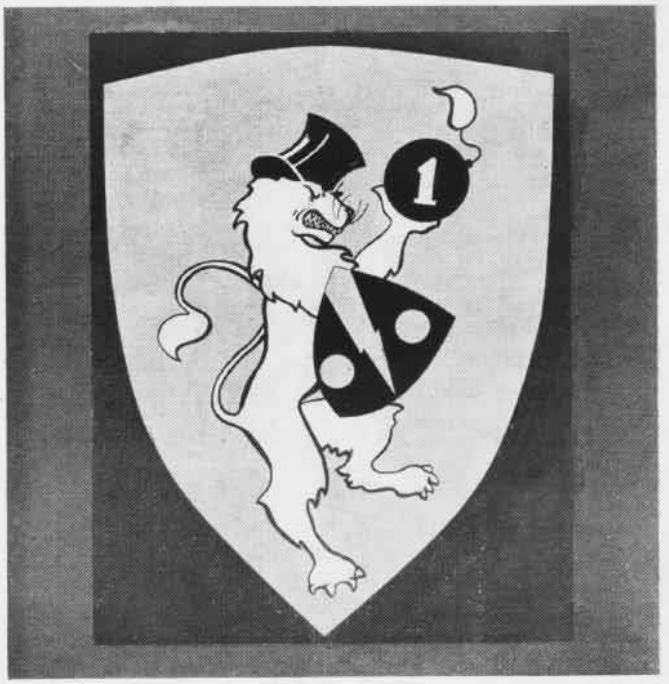
THIS month's insignia include the first one from an air station—Alameda. Its San Francisco bay bridges and an FD-1 are highly colored. A unique design is that of MAG-25, which flew thousands of wounded from Guadacanal and urgent cargo to the battlelines. Its motto, Securité en Nuages, was typical of its dodging among clouds to avoid Japs. MAG-25 was the predecessor of SCAT. Air Group One's rampant lion represented torpedo bombers, the smoldering bomb the fighter-bombers and the buckler the Red Ripper squadron.



NAS Alameda

MAG-25

FASRON One



Air Group One